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Place of Chemical Disinfectants In An Area Clean-up

By S. B. Fracker, Madison, Wisconsin

THE essential features of a clean-up campaign, whether it is carried on under that name or merely as an apiary inspection project or bee disease control, are three in number. They are:

First, the discovery of every apiary in the district.

Second, the discovery and correct diagnosis of every case of disease in the bees.

Third, the control and, if possible, the eradication of such infection as is found.

In times past beekeepers and inspectors have often overlooked the importance of the first of these features and sometimes even the second. No royal road to the discovery of every apiary has been found, although different shortcut methods have been proposed and tried. The most popular of these is that of the compulsory registration of the beekeepers. That has not been adopted in Wisconsin because it is believed that it would be just as hard to find the beekeepers who neglect to register as it is to locate all of them at the present time and that the cost of enforcing the regulation would be greater than the benefits to be expected. The only way, therefore, in which we in Wisconsin are trying to locate every apiary, and thereby every case of disease, is to hunt for the bee yards by searching along every county road, inquiring, of course, as we go.

It is also important to discover and diagnose, correctly, every case of disease. If the inspectors are not sure, microscopic diagnosis is always made. In this connection it is essential that every colony in every apiary be examined, regardless of the confidence the inspectors may feel in the ability of the beekeeper to discover and diagnose his own cases of infection.

It is clear that chemical disinfectants

therefore, must relate to only one of the three factors of an area clean-up campaign, namely, that of the eradication or control of the disease. But, when we examine the work of eradication, we still find that there is a great deal to be done in which the formaldehyde solutions cannot be of assistance. The various problems in eradicating disease from a given yard involve what to do, first, with the living colonies found infected; second, with the living colonies not found infected; third, with the honey; fourth, with the metal equipment, such as the extractor and tools; fifth, with the wooden equipment, including supers, frames, comb honey sections, top and bottom boards and similar material, and, sixth, with the combs themselves.

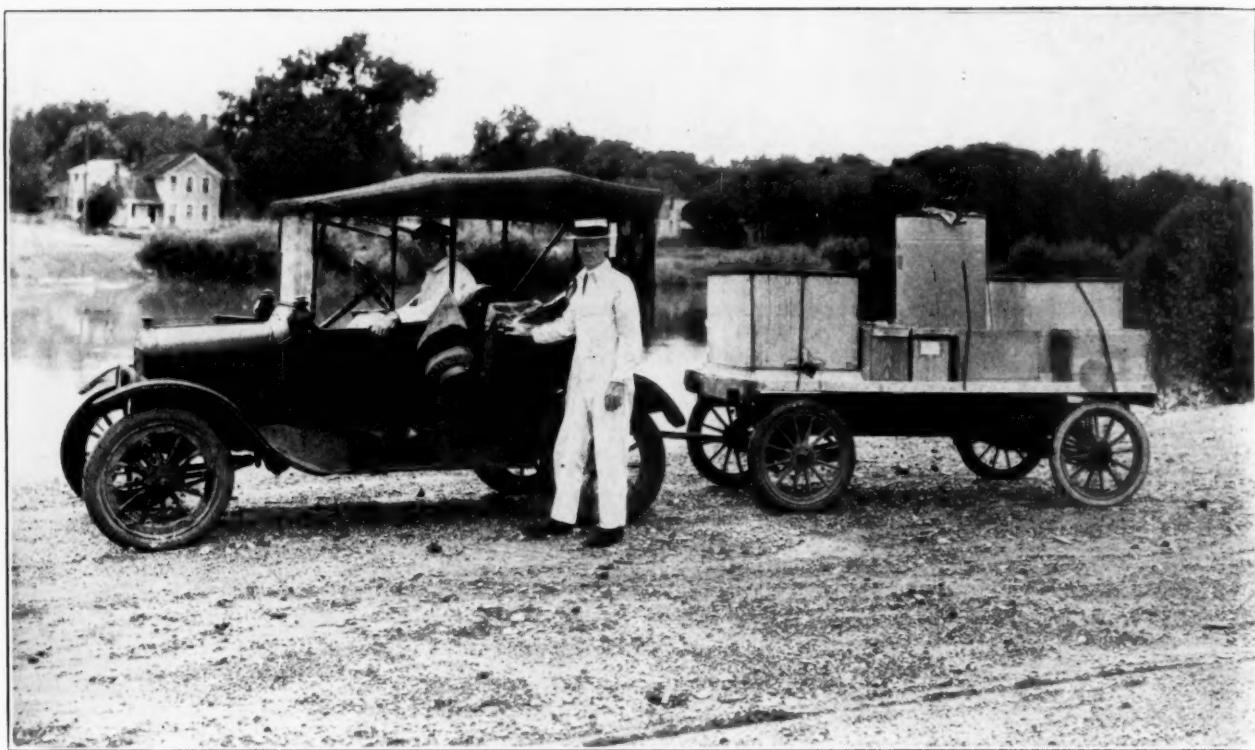
Every beekeeper and inspector recognizes the importance of looking after the first and last of these sources of infection, but neglect of the other four is a frequent source of future trouble. Even if the living colonies found with American foul-brood are destroyed, the chances are that some infection has gotten into one or more of the remaining living colonies of bees and has not yet developed to a stage at which it has been discovered. There is, also, almost always honey on the premises to which the bees later secure access and which may have enough bacteria in it to cause new infections. Both the metal and wooden equipment, whether known to have been used with infected colonies or not, are prolific causes of trouble also.

None of these problems can be successfully handled with chemicals. The only way we can provide for the living colonies is to make successive re-inspections until we are sure we have discovered every case. The best thing to do with the honey is to see that it is in closed containers and is used for human food at the

earliest possible moment, as its value for that purpose is not decreased in the slightest. All honey, which cannot be marketed immediately for human food because of its quality, should be boiled, and if it occurs on the tools and on the floor and bench of the honey house, it should be thoroughly scrubbed up and the water poured into a pit and covered up. The metal equipment should be thoroughly scrubbed with boiling water, and the wooden equipment either boiled or scorched.

We come at last to the beekeeper's favorite and most valued piece of property, his extracting and brood combs. It is in the disinfection of these that Hutzelman's solution and the water-formaldehyde solutions are of value. Even here they are of greater importance as a safety measure than as a direct disinfectant of known diseased combs. When the owner of a commercial apiary has half a dozen infected colonies one year, two or three the next, six or eight the next and one or two a year for several years after that, it is certain that some disease is being carried over in the extracting combs. At the same time, while he may not object to killing off the diseased colonies, he may feel very much put out at the idea of sacrificing from two to ten thousand extracting combs just because some of them have had infected honey in them and because he cannot tell which they are.

In circumstances like this the chemical disinfectants are the only solution. We believe that they are scarcely worth while for the beekeeper who has less than three or four hundred combs on hand. The bee journals have published descriptions of small ten-frame tanks for the use of beekeepers who have only a few frames on hand, but the original cost of solution is so great and the labor of getting the tanks



Flat bed truck and outfit for sterilizing combs

ready and transferring the frames every second day is so tiresome that the chemical disinfection of a smaller number of combs is not recommended as efficient.

It is scarcely necessary to outline at this time the method of using Hutzelman's solution or water-formaldehyde. It consists, as you know, of several steps:

1. Uncapping every cell in all the combs and carefully extracting any honey which may be found in them.
2. Soaking the combs twenty-four hours in water.
3. Extracting the water.
4. Soaking them forty-eight hours in the formalin solution.
5. Extracting the formalin solution and saving it for future use.
6. Airing or rinsing the combs in clean water to make them attractive to bees again.

Dr. Sturtevant has shown in recent publications that a mixture of commercial formalin, such as can be secured through drug stores, with water in the proportions of four parts of water to one part of formalin, is just as successful as Hutzelman's solution, provided every cell in every comb is carefully uncapped. In either case the solution ought to be analyzed after it has been used with two or three thousand combs, in order that the formaldehyde which has evaporated may be replaced in proper amount.

Chemical disinfection adapts itself

to community work very nicely. In Wisconsin it has been tried in different ways in two different counties. The state has an outfit with a capacity of one hundred combs in formaldehyde and one hundred more in water at any one time, enabling the beekeepers to handle about three hundred combs a week. An extractor is included with the outfit, so that there may be no danger of mixing honey with the solution. This equipment is mounted on a trailer and may be moved from place to place by towing.

In Rock county it was moved from yard to yard, the county inspector taking it to its new location as soon as each beekeeper had finished with it. The county inspector also gave instructions to the beekeepers as to the method of use and started them off with their first batch of combs. In Ozaukee county, on the other hand, a permanent station was established, and the combs were brought to the apiary at which the equipment was set up and were treated there. In the latter case it was, of course, necessary for them to pay a small charge for the labor of transferring the combs from one solution to the other and extracting them twice, as well as paying the cost of solution.

In Rock county 2900 combs were treated. It took sixty-five gallons of liquid to cover the one hundred combs, and they found it necessary to add about four gallons of fresh solution to each new batch of combs

to bring the volume up to the required amount. The Rock county beekeepers used 150 gallons of solution for the 2900 combs and had enough left at the end to cover fifty combs. The material cost about \$1.50 a gallon and the average cost per comb amounted to 6 1-3 cents.

Analysis of the remaining solution a few weeks ago showed that the work had weakened the liquid somewhat and that it was necessary to add one part of commercial formalin to every twelve gallons of solution still on hand. This addition brought the disinfectant up to the original strength.

In Ozaukee county 4838 combs have been disinfected to date. The cost of the solution was \$105.75, consisting of 70 1/2 gallons at \$1.50 per gallon, and the labor cost was \$133.05. The total amounted to \$238.80, or about 5 cents per comb. Apparently there was less waste of material where all the work was done by one man at one location.

In the case of community disinfecting plants the problem of financing the work is the most difficult one. The method used by both Ozaukee and Rock counties was for the beekeepers to put up an initial assessment of \$10 or \$15 apiece in a special fund in the hands of the secretary or treasurer of the county beekeepers' association. The solution was purchased with this amount and all the solution used on the premises of one beekeeper was charged against

him. If he used more than would be paid for by the initial investment, he paid the balance into the fund.

The state equipment is of such shape that enough solution must be used to cover at least fifty combs. At the end of the work this amount was on hand, although it had deteriorated and discolored somewhat. It was sold at a reduction to one of the beekeepers and the fund closed out by distributing all that remained to those who had made the original investment.

If one of the beekeepers is willing to take over this entire work and look after it himself, the simplest way is for him to finance it and to charge not only for the original cost of the solution and the labor, but a small margin to make up for the decreased value of the solution after the work in his locality has been completed.

The writer considers the use of

disinfecting solutions for the treatment of all combs in infected apiaries one of the most valuable of recent contributions to beekeeping methods. They are recommended to every beekeeper who has enough combs on hand to justify their use, and in all cases every comb on the premises which is worth saving should be treated. All the others should be destroyed before the work begins. The only exceptions are combs that are, in fact, inside the hive with living, healthy colonies of bees at the time the treatment is being carried on. After the treatment is concluded, every colony subsequently found diseased, and every comb which has been in a hive or super with it, should be immediately destroyed. If the work has been done well and if other sources of infection in the apiary have been cleaned up, the number of infected colonies to be destroyed will be very small.

country. It has been widely heralded that a nationally known manufacturer and advertiser of denatured foods has advised the eating of honey with his products; by so doing he has not only advertised honey as a food, but he has added to his products practically the only life-giving quality they will contain; thus he has not only helped the honey producer, but he has saved his own products from eventual oblivion.

If the readers of this letter have not done so, they should procure and read "The Science of Eating," by Alfred W. McCann (published by George H. Doran Company, New York), and see what he says not only of honey but the combination in which it should be used; after which the honey producers' occupation, if his suggestions are followed, will become that of a food producer rather than a pamperer of the tastes of the sweet-loving public, and could the general public know the facts, not sufficient honey could be produced in the United States to satisfy the demand.

Vermont.

Granulated Honey

By Dr. R. J. Goss

I HAVE been very much interested in your recent editorials in the Journal relative to granulated honey.

My own experiments with honey lead me to believe with Thomas, as stated in the *Lancet* of Edinburgh, that the heating of honey to render it liquid, and to keep it permanently so, destroys from 25 to 40 per cent of its food value, this being determined by the length of time it is exposed to the given temperature.

Natural, unheated honey taken from the brood frames is an anti-scorbutic of no mean value, as I have many times proven in feeding rachitic children, and is often tolerated by them better than is cod liver oil, especially when there is a fat intolerance. Its use with orange juice, or given with hot water as a quicker stimulant, cannot be surpassed by many drugs and probably not equalled by any.

The part it plays in a properly balanced ration cannot be replaced by any sweet that I know of in the world.

With the sole exception of maple sugar, which contains large quantities of malate and phosphate of lime, it is the only sweet (of which there is any knowledge) containing these alkaline giving elements in combination; all of the other sugars and sweets being acid producers.

Caillas (*American Bee Journal*, May, 1926,) gives the mineral contents of honey as phosphate of iron .251, phosphate of lime .535, carbonates and sulphates .184, or a total of .970 per one hundred parts of unheated honey, and while he does not

further say so, I will add that these minerals are in a form that can be directly absorbed into the blood stream, but when honey is heated the form is changed so they are precipitated, or become inert, as the case may be.

This alkalinity of honey, when absorbed into the bloodstream, gives honey its preeminence over the dehydrated products of corn, beets or cane. Allow me to add that unless the users of sweets of the world became fully alive to that fact, and that quickly, the entire race will rapidly crumble to a state of non-efficiency and ill-health by the enormous increase of diabetes, hardening of the arteries, acidosis, and their allied conditions.

May I suggest that your Journal start a propaganda of education along this line and at least save the beekeepers themselves, if not the general public, from their ravages.

I have prescribed in my office in the past year, to people already afflicted, nearly a ton of natural, unheated honey, and, I may add, with uniformly brilliant results.

Last spring, when my own supply had become exhausted, I attempted to use commercial honey which had been more or less heated, and immediately got into difficulty with their digestions going bad, one small child refusing to eat it.

I cannot understand why any honey producer will attempt to destroy the food value of the natural honey, as he then becomes a direct competitor of the various syrups so widely advertised throughout the

More Facts About Honey

By W. A. Walsh

Seeing that the great problem of the present day is the marketing of honey, I venture to mention an idea that occurred to me as bearing indirectly on the subject and one that may be emulated by beekeepers throughout the country.

For some time past, I have observed that food experts are conducting a series of researches and sometimes announce very important results, particularly on the subject of vitamins. They speak quite often of sugar, but never a soul seems to imagine that honey is rich in Vitamin B. It seems to me that if beekeepers would write to such experts, as they see announced in the leading daily newspapers, it is possible that once in a while much good will be done.

These experts have at their hand the best laboratory equipment the world can provide, and, when they care to speak in public, the newspapers of the world are open to them. Their views are listened to with respect and their suggestions in the matter of health are frequently acted upon.

Recently, I have written to two such institutions, one of whom sent me a sympathetic reply.

Manitoba Honey Production Increase

The production of honey in Manitoba, Canada, increased from 1,302,000 pounds in 1925 to 3,522,512 pounds in 1926, according to Vice Consul L. H. Johnson, Manitoba, Winnipeg, Canada.



Established by Samuel Wagner in 1861

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Regularity In the Apiary

It is very nice to see an apiary with all the hives of the same color and at regular distances apart. But it is not the best for the bees themselves. When there are twenty or thirty hives arranged in even rows, over a very even yard, the appearance is good. But there is much danger of what is commonly called "drifting." Drifting is not of very much importance when only the worker bees are concerned, although very often strong colonies gain in strength at the expense of weak ones, because the greater noise and bustle of a strong colony attracts the young bees; but the greatest danger comes when the young queens take their wedding flight. Those young queens, if they make a mistake and enter the wrong hive, are doomed, and if their colony has no other reproducer, the colony itself is doomed unless carefully looked after.

Only those who have reared bees of different races in the same apiary can ascertain how much loss there may be from drifting. Mr. Langstroth perceived this and wrote:

"If a traveler should be carried, in a dark night, to a hotel in a strange city, and on rising in the morning should find the streets filled with buildings precisely alike, he would be able to return to his proper place only by previously ascertaining its number, or by counting the houses between it and the corner. Such a numbering faculty, however, was not given to the queenbee; for who, in a state of nature, ever saw a dozen or more hollow trees, or other places frequented by bees, standing close together, precisely alike in size, shape and color, with their entrances all facing the same way and at exactly the same height from the ground?"

For that reason a good beekeeper colors his hives differently, locates them in rows more or less irregular and tries to have each colony fairly indicated by a tree, a bush, by putting two hives close together and the third one farther apart—in fact by differentiating them as much as possible. It is not quite so pretty as long, regular rows, but it is much more practical. Louis Scholl, former editor of the "Beekeeper's Item," always places his colonies in bunches of five, facing three different ways, so that very few bees can fail to remember the location of their home. We have always aimed to have trees, shrubs, or other markings so placed that bees would readily see and remember the location of their home. After a few flights very few bees make a mistake, but it is during the first flights that the queens run the risk of getting lost. Now that swarming is at hand, let our readers bear in mind that the location of each hive ought to be noticeably different from that of any other hive, so the bees may not have to "count" the hives in order to get to their home.

Larger Worker Bees From Larger Cells

The Belgian bee magazine "L'Apiculture Rationnelle," in its last four or five numbers, discusses the advisability of supplying the colonies with foundation of larger cells

than the bees build naturally. On the other hand, one of our contemporaries, in America, appears to consider smaller cells, a larger number of them to the comb, as a progress. Which is right?

The square decimeter, a trifle under four inches each way, is the standard of measurement. Mr. Langstroth and Charles Dadant figured that there are 838 worker cells, on the average, in a square decimeter of naturally built worker comb. Collin (1865), a very accurate observer, placed the number at 854. Later a French priest, R. Pincot, suggested 736 cells to the square decimeter, claiming to have obtained much larger and better bees in cells enlarged to that size. Pincot held, with a great deal of insistence, that bees reared in cells of that dimension were larger and better honey producers than bees reared in the naturally built combs. On the other hand, a Mr. J. B. Gramont, during the same year, wrote in this same magazine that the larger bees were sometimes less active than the normal ones, and cited the fact that, among human beings, the large men are rarely more active than men of normal size or even than small men, much depending upon the disposition of the race.

Foloppe Brothers, great experimenters in beekeeping, of Calvados, wrote us that they had tried the larger cells and that, although the bees produced in them were larger, there was no gain in the production of honey.

In one of the last numbers of "L'Apiculture Rationnelle," Mr. Baudoux, an old beekeeper, claims to have tried the larger cells as early as 1893, which would be several years previous to the trials made by Abbe Pincot. He recommends experimenting with as large cells as 700 to the square decimeter, which would be an increase of size of about one-sixth. Could bees be reared that would be as large as that and be neither drones nor queens? And what would be the result of having the worker bees in a hive with as large a thorax as the queen, so that neither they nor the queen could pass through the openings of an ordinary queen excluder?

Since queens are reared from the same eggs that would produce workers, we see no reason why larger workers could not be produced. The only question is whether those larger bees would be an improvement upon the normal bees.

Whatever be the outcome, we believe it is a mistake to make cells smaller than those of the naturally built worker combs. In the course of a few generations the cells of the brood combs become more or less narrowed by the large number of cocoons left in them by the emerging workers. So the future surely lies in full normal size cells rather than in smaller ones.

Press Reports

The Associated Press of America published the fact that the Hamilton, Ill., High School celebrated the seventieth birthday of C. P. Dadant and hung his picture in their assembly hall. This is quite a compliment. But it has also made some overstatements. It is not correct to say that he was the first importer of Italian bees into America, for the first imported Italian bees were received by Samuel Wagner in 1859, when Dadant was only eight years old. It is also incorrect to write that he invented a hive, for his hive is only a modification of the Quinby hanging-frame hive. Neither can it be truthfully said that he harvests sixty tons of honey a year, for he did this only once, with the help of his sons. The great fault of our newspapers is their habit of overstating facts. Probably most of what our newspapers publish is thus artificially enlarged.

Special Seasons of Swarming

There are seasons when our efforts to prevent swarming are almost entirely inadequate. It is when the bees, after a long spell of bad weather, find themselves at once overwhelmed by good weather, a promising honey crop and a fast increasing population. Then they lose their head. Often the beekeeper has not foreseen the possible quick change from a shortage of food to plenty. He has perhaps left the entrances reduced, has failed to provide supers, has overlooked the possibilities of the encouragement to a growing population of an opening harvest and has allowed the "swarming fever" to take possession of his bees, until too late.

So, when the crop is near, we must be sure not to delay the opening of wide entrances, raising the hives from their bottom board to a sufficient extent to permit full ventilation, providing shade where they are exposed to the sun's rays, and supplying supers in sufficient number.

When the swarming fever has once secured possession of their little brains, it is next to impossible to control. It is better to overdo the supplying of supers, rather than allow a shortage. When they once begin storing honey in good faith and there is plenty of room for it, they settle to the hard work without any further thought of leaving the old home for a new one. But since there are exceptions to all cases, we must have some hives ready for emergencies.

The Mississippi River Floods

At the date of this writing, the floods of the river have been considerably reduced, but leaving a great deal of damage to farmers and beekeepers in the states bordering on the stream. As in former floods, many people who know that we are located near the river have written us in a spirit of sympathy to express the hope that we were not sufferers. No, we are in no danger, we are above all possible floods; our apiaries and homes are over seventy feet above the highest water, our foundation factory ten feet above highest flood. But many are the sufferers where the big stream was held by levees. Few people realize what an immense space is covered by the Mississippi Valley, from the mountains of North Carolina and New York to the Rockies of Montana, Wyoming and Colorado. Farmers located along the stream become accustomed to it and to the slowness of its rises. I have seen farmers, when the water was within three feet of their house floor, coolly measure the rise or fall of an inch, within the night. They know by experience how many million barrels it takes to push the flood up another inch. This causes unconcern in the presence of a real danger, in heavy floods.

Flood Destroys Bees

There are many losses among the beekeepers of the southern Mississippi Valley, as the following letter testifies:

"The Arkansas River swept away everything that I had in the world. I had my bees on high benches, but the water came so fast and so much higher than anyone thought possible that nothing could be saved. The water is now (April 30) ten feet over my bees. And only two weeks ago they were bringing in honey and filling the supers at a tremendous rate. It will take me a long time to get back in the game with enough bees to make a living."

Yours hopefully,

C. M. Thompson, Bingen, Ark.

As it is out of the question for the beekeepers of the country to follow up and fairly help all the losers in our pursuit, it is most advisable for us to help the Red Cross in its work of rescue. We therefore urge all beekeepers who can afford to give anything, for the flood sufferers, to give to the Red Cross all they can spare. It is needed, not only to help them to pull through the dire moments of suffering, but also to rebuild their devastated apiaries and homes. Think, what a terrible thing it is to not only lose your stock, whether bees or cattle, but also to find your home full of mud, after the waters recede. Help will be needed during the entire year. Give, give, give!

Floods In Louisiana

We call our readers' attention to the article on bee-keeping in Louisiana, in another section of the paper, as written by Mr. M. G. Dadant when he was on a trip in this section during the past winter.

Editorial comment is necessary because of the fact that conditions have changed so materially down there and some of the weaknesses of flood control, etc., have come to such a catastrophic realization within the last few weeks.

In fact, Avoyelles parish and that section of the state through which Mr. Dadant traveled is now completely submerged in water and probably 75 per cent of the breeders, at least, mentioned in the article have their apiaries flooded, as well as their homes.

Undoubtedly the catastrophe, although it will take years for the people present there, including the beekeepers, to recover from it, will in the end have a desirable effect, because it will mean some real constructive work along the lines of flood control. For years upon years we have been draining swamps, cutting off timber and making our hills into pasture land without any idea of the ultimate outcome through quick drainage of water. As a result, instead of water being retained in the timbers and swamp lands in the North, whenever heavy rains or snows occur, the drainage is immediate and all of this water is thrown immediately upon the sections of the lower Mississippi. We have all been guilty. Timber has been cut off as rapidly in the South as in the North, but, of course, there the results have not been so apparent.

What we need is not only to give this matter consideration through our Government, but everyone boost for reforestation and for a sane plan of flood control and the preservation of our natural resources, natural methods of drainage, etc. Man has overcome some of the provisions of nature and he is having to suffer the consequences.

Intelligence or Instinct

It is now considerably over a year since the above subject was first discussed in this magazine. Following Mr. Latham's article in 1926, February number, we received so many letters of comment that we decided to put an end to the discussion which would have occupied too much space in our columns. But we had already promised to insert a letter from Mr. Couallier on the subject. This was set up in type and somehow delayed until April of this year.

Now Mr. Latham wants another chance to defend his views. We insert it in this number, as the last of the series. We do not believe anything can be gained from further discussing of whether bees are only creatures of instinct or have some reasoning powers.

Russian Magazines

Appreciate American Workers

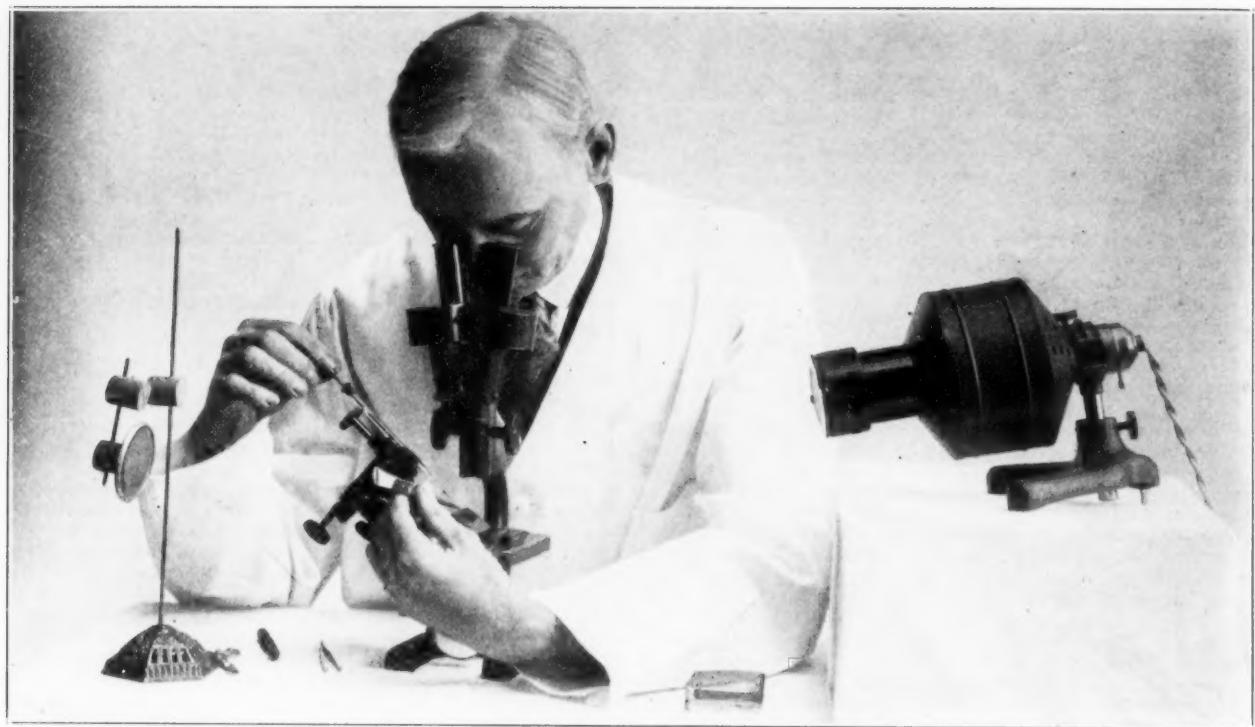
The Russian magazine published by the Experiment Station of Tula, Russia, in its March number, published a photo of our Prof. James I. Hambleton, of Washington, and a short biography of this American representative of beekeeping. A few months ago this same magazine had already published the photos of our editor and his wife, taken from the April, 1926, edition of the American Bee Journal.

Radio Program Kansas

State Agricultural College

We have received the program of the KSAC, too late for insertion in our May number. It announces six lectures by Professor R. L. Parker, most of them to be delivered in May. There is still one to be delivered June 7 at 7:15 p. m., on "Honey: The Flavor of Flowers in Your Food."

This kind of work is just beginning. The future is ours. Let us make use of it.



Dr. Watson at work with his instruments for hand mating

Controlled Mating of the Honeybee

Part 2 — How It Is Accomplished

By Dr. Lloyd R. Watson

LAST month we gave a brief historical introduction to the problem of controlled mating in honeybees, and listed what appear to be the representative methods which have, during the last 150 years, been used in attacking the problem. Using this as a point of departure, we shall now describe the mating of queens by instrumental insemination.

Let us observe in beginning that the theory of instrumental insemination is scientifically correct, and that its use has long been known in breeding certain domestic animals, especially horses. Preliminary to a series of unsuccessful experiments to effect crosses between hens and certain other domestic fowls, in 1908 the author instrumentally inseminated a virgin pullet with sperm from an absent rooster and reared a small flock of "fatherless" chicks. Inspired by this slight success, and after multitudes of failures to realize controlled mating of queenbees by any other scheme, the method of instrumental insemination was settled upon as being, in our opinion, the most promising of success.

It was perfectly obvious from the very first consideration of this method that only delicate instruments and careful procedure offered the slightest hope of success. Indeed,



Closer view of the microscope and stage, forceps, scissors, needle. On stage is micro-syringe and plunger.

the published reports of the large company of scientists and beekeepers from all countries and in all time who have searched for some method of controlling the mating of the

queenbee, form a galaxy of discouragement which our enthusiasm could not bear long to dwell upon. Abandonment of the problem would never give satisfaction because it was abandonment, and pursuit even under the spur of enthusiasm was ever punctuated by the nagging question, "Is it worth while to continue?" Still it was always refreshing to return to the belief that the principle was sound, and success seemed to await only sufficient refinement of apparatus and technique. That the instruments and the procedure about to be described are far from perfect, and need further refinement, is evidenced by the fact that thus far only about 50 per cent of the queens treated receive any practical degree of insemination.

The operation of inseminating a queenbee is by nature a microscopic one, and a binocular microscope of the Greenough type, or one of the newer wide field binoculars, giving a magnification of about fifteen diameters, is indispensable.

An all-glass syringe ready made and suitable for taking up and handling the tiny charge of sperm from a single drone has not been found anywhere available, and necessity drove us to the alternative of constructing one specially designed for



Laboratory in apiary where Dr. Watson developed his method

the work. The essential features of this syringe are (1) a straight, all-glass plunger barrel of positively uniform bore, five-tenths of a millimeter inside diameter, and (2) a tight-fitting plunger actuated by a fine-threaded screw giving a plunger stroke of 15 to 20 millimeters.

The first consideration in treating a queen is that every part of the operation shall be under perfect control. To control and stabilize the movements of the syringe, we use the so-called Barber pipette-holder. By turning one or another of three fine screws set at right angles to each other in the three planes of space, it is possible slowly to move the syringe forwards and backwards, up and down, right and left. This manipulator is itself mounted on a special flange which arises from the stage of the microscope, and is so inclined as to tilt the syringe to an angle of about 40 degrees from the horizontal, thus enabling the operator to look into the vestibule of the queen while working.

If the queen were allowed the slightest freedom of motion in the abdomen she might, by struggling, unwittingly become her own greatest hazard and defeat the purpose of the experiment. To hold her in a fixed position and to insure her against injury from this source, she is carefully placed dorsal side downward in a form carved out of a tiny operating table (see photo) just to fit her head, thorax and abdomen, the tip of the abdomen just extending over the edge of the table. Furthermore, the operating table is tilted up so as to hold the queen with the long axis of her body in direct line with the long axis of the syringe.

In this position she is held motionless by several loops of silk thread



Bed on which queen is bound with silk threads

thrown over her body and around the operating table. Care is taken that

her wings and legs are in natural position, for if she should emerge from the operation with broken legs or crumpled wings she would probably be useless as a mother.

A strong artificial light is indispensable for work on dull days and in the night, but it is best not to allow strong artificial light to play directly upon the queen for danger of burning her. We illuminate the queen with a shaft of light from a 150-watt microscope lamp reflected from a mirror, and even then we do not subject her to this intense light for long at a time.

Having thus indicated the necessary apparatus, let us now describe in brief detail the actual operation of inseminating a queen. Ten minutes before beginning the main procedure we liberate a few choice drones on the inside of the window. The strongest ones fly hard and long against the glass, while the weak and callow ones soon settle down and rest near the bottom of the window. While this sifting of the drones is going on we lightly seize the virgin queen to be inseminated and place her in the form in the operating table, wind her down, and set her one side to wait while we fill the syringe. If she is not too much frightened she will welcome a taste of thin honey on a toothpick while she waits.

From the stronger drones still flying vigorously against the window we select the most likely looking one and snip off his head. If he is functionally mature the shock of decapitation will probably cause him to evert forcibly the copulatory organ. Sometimes merely taking a drone in the hand will produce in him this reaction. If he does not



Lamp, microscope, mechanical stage, and reflector

ejaculate promptly when beheaded we discard him and try another. When the desired reaction is obtained, we seize the everted, curved organ with sharp tweezers and pull it lose from the body. As it comes away it brings with it the so-called bulb or seminal pouch distended with its tiny droplet of creamy colored sperm and pearly white mucus.

The bulb is now laid on the index finger of the left hand and passed into the magnified field under the lenses of the binocular. Here it is easy to distinguish the separate regions of the mucus and of the sperm by their colors, and with the degree of magnification previously suggested it is even possible to observe the swirling masses of spermatozoa through the transparent membrane of the bulb.

This white mucus plays an important role in the copulation of these insects. A tiny smear of it is always left by the male in and over the vulva of the queen at the time of copulation to be coagulated by the air, and to act as a plug to prevent the backflow of any of the sperm, and to seal it away from the air. From repeated experiments it has been found that if this mucus plug is removed from a normally mated queen, or even slightly meddled with before she has borne it for two or three hours, she may either become a drone layer or else wait a long time before beginning to lay.

The finger still bearing the distended bulb is now brought up to the nozzle of the syringe in the magnified field, and so manipulated as to cause the point of the syringe to pierce the wall of the bulb into the region of the white mucus. The plunger is now backed about two millimeters and a small quantity of the mucus is taken up. The position of the finger is then shifted so as to bring the point of the syringe into the region of the yellowish sperm. The plunger is again backed, this time till all the sperm is taken up. As the now collapsed bulb is removed from the field a tiny smear of the mucus is allowed to cover the tip of the syringe to seal the sperm away from the air for a moment or two while we bring the queen into position.

The queen, still resting comfortably on her operating table, is now placed on the microscope stage with the tip of her abdomen in the center of the field, and pointing toward the right. The operating table is secured in this position by a rubber band passing over it and underneath the stage. The left hand, grasping a pair of finest pointed tweezers, is passed around the microscope to the left so that the points of the tweezers

approach the queen from the opposite side from that on which the operator sits. The tweezers in the left hand, aided by some moderately sharp applicator held in the right hand, now gently pry apart the genito-anal plates of the queen, an operation which she may resist with remarkable muscular force. The tweezers are cautiously maneuvered into such position that when they are allowed to open slightly they push back the plates and expose the genito-anal vestibule. If the lamp and reflector are in correct position the vestibule is now flooded with light and the sting, rectum and vulva are plainly visible.

While still looking into the magnified field, and while operating the controls of the pipette-holder, the tip of the syringe is advanced till it stands just over the opening of the oviduct and almost touching it. At this point the plunger is moved forward just enough to break the mucus cap which was left over the tip of the syringe to seal it from the air. The syringe is again ad-

vanced, this time till the tip just disappears within the oviduct of the queen. As it enters, the little hard mucus cap is brushed one side by the membranes and remains outside. We now slowly advance the plunger till the sperm is all deposited within the oviduct. Finally, as the syringe is backed away, the droplet of white mucus which, it will be recalled, was drawn up ahead of the sperm when loading, is the last to be forced out, and is left to coagulate in and over the vulva as a plug to prevent the loss of any of the sperm, and to seal it away from the air.

When this is done the queen is ready to be released from the operating table. Both wings on one side should be at once clipped off, and then she may be given back to her own bees, or she may be introduced into a queenless colony in the usual way. If she has suffered no bodily injuries during the operation, she will be accepted by her own bees with the same etiquette as if she were just returning from a normal wedding flight.

Co-operation

By Homer B. Turrell

PERHAPS the nearer this word is spelled to "corporation," the more chance there will be for success.

The railroads, which for a time appeared to be the spoiled darlings of American finance, able to get away with anything short of murder, have found, notwithstanding their almost military organization, that co-operation can be of great use to them, and they are now preaching it daily to their many employees.

Likely one reason why there have been several failures among the farmers of this country who have attempted collective selling is that there has been no compelling necessity to cause them to hang together. The co-operatives of Roachdale, England, who have made a huge success of their society, came together on account of their almost hopeless economic situation. The first community store, a very small affair, was established in rented quarters in the town of Roachdale. From this small beginning it has grown to be a great merchandising establishment, owning its own stores and wholesale depots, with an annual turnover of millions of dollars. This was not accomplished without a great deal of careful planning, management and work. The lesson to be learned from its success seems to be that, when necessity drives hard enough, co-operatives can be established on a paying basis.

It is well to remember that any proposition for co-operation, either in selling or buying products, is more or less upsetting to those who are at present engaged in conducting the various transactions in our established system of marketing. This system has been built up from time immemorial, and not without good reason has it lasted until the present day. Anything that interferes, or is likely to interfere with it, is regarded by those already in trade with intense suspicion and distrust. Therefore the attempt to put co-operation over in either direction by hurrah methods is likely to result in failure.

Americans are prone to want to do things in a hurry. If co-operation is a good thing, which is pretty generally conceded, then put it over in a big way with a successful drive, creating immense enthusiasm and enrolling a large membership,—let co-operation spring from the enthusiasm of the occasion full-fledged, like Aphrodite, from the seafoam at Cyprus.

There is nothing to indicate that an organization of one thousand poor business men is any better than one of a less number; the only difference is that they have more money to lose.

Co-operators will find it necessary to be on guard against the loud talkers who can generally attain official position but do not know much about

management. Of course, the loud speakers are all right—on the radio.

The enthusiasm of the mob has a way of dying out when the members are asked to dig up the where-with-all to keep the enterprise going,—too often it becomes a case of "let George do it."

A certain general of the Civil War said: "I don't know much about strategy, but I know this: If I can get there first with the mostest men I can generally win the battle." Too often, while "George" is co-operating, our economic strategist is trying to get to market first with the lowest price. This does not help win the battle of the market. Usually, in drawing up the membership contract an attempt is made to tie the members up in such a way that they cannot go off on their own and thus queer the game; but experience has shown that unwilling co-operation is little better than no co-operation at all.

Apparently the best way for the bee men to co-operate is in the very way that they have started out—that is, by organizing local associations wherever production is heaviest and activity the most intense. Thus we find that they are pretty well organized in Texas, Colorado, California, Ontario, New York, and in other sections. It seems that these points of concentration should include about three or four in the Middle West, one in the Southeast, one in the Intermountain region, and one in the Pacific Northwest.

If it were possible to establish successful locals at all the points mentioned, it ought to be possible to create orderly markets for the bee man's ware. If it were found that non-co-operators of any given territory were trying to sell their product too cheaply, it would be the privilege of the local in that region to buy up such honeys and sell them at a profit, thus allowing the logic of events to show the non-co-ops the error of their ways.

Of course, one great advantage of co-operation is in the establishment of grades for honey. It does not seem necessary to have as many grades as are now used. Amber is probably the natural color for our product, and it is certainly pretty enough. To create the grades of "white" and "water white" seems too much like trying to paint the lily. The same thing with "fancy" and "extra fancy" in the comb honey grades; it can only be produced by the greatest experts in favorable locations. Bulk comb honey can probably be made to look just as attractive, and with it there is less danger of smearing things up in the grocery stores. If nothing higher than the

amber grade were produced in extracted honey, much more of the product could be brought up to that level.

Since it is obvious that the word "extracted" cannot now be used for the sale of liquid honey, which is not always liquid, it appears that the term "separated" might be used in its place. So many people are familiar with the cream separator that it is thought that no confusion would result. It is suggested that the term "Honey Extractor" be changed to read "Honey Separator" in all catalogs of apiary supplies, thus avoiding forever the hoodoo of the word "extracted."

The advertising of honey is, of course, a problem for the expert in that line. It might not be possible at first to have a national brand for honey, but it seems to be perfectly feasible to have regional brands, such as Lone Star, Clover Leaf, Tulip, Intermountain, Pacific, Lakeside, etc. We do not see the makers of syrup, soap, lard, meat, oranges and other commodities advertising them in a general way. No, it is always some particular brand of these which gets the publicity. In the same way the product of the hive should be advertised under a definite brand—that of the association which grades it—for, when all is said and done, the battle of the market place is fought under the standards of definite products which have a name and quality to sustain; and they bid for public favor through publicity of a very definite kind.

The Demaree Plan of Swarm Control

A reader asks that we reprint the Demaree plan.

The Demaree System was published first in the American Bee Journal, April 21, 1892. A new description of it was given by Dr. Wallace Park in May, 1922, page 204. Briefly, Mr. Demaree wrote:

"I begin with the strongest colonies and transfer the combs containing brood from the brood chamber to an upper story above the queen excluder. One comb containing some unsealed brood and eggs is left in the brood chamber as a start for the queen. I fill out the brood chamber with empty combs. Full frames of foundation may be used, in the absence of drawn combs.

"The colony thus has all of its brood and the queen, but the queen has a new brood nest below the excluder, while the combs of brood are in the super. In twenty-one days all the brood will be hatched out of the combs above the excluder and the bees will begin to hatch in the

queen's chamber below the excluder, so a continuous succession of young bees is sustained. Usually the combs above the excluder will be filled with honey by the time all the bees are hatched, and no system is as sure of giving one set of combs full of honey for the extractor in the very poorest seasons; and if the season is propitious the yield will be enormous under proper management."

Some apiarists, such as David Running, of Michigan, use an extra super between the upper story full of brood and the queen's brood chamber below. Sometimes the bees will rear a queen above the excluder. If an entrance is given in the upper story, she will mate and begin to lay above. Then the old queen may be destroyed and the colony thus has a young queen. The only defect of this method is the large amount of work which it entails, but it is probably the best method to prevent swarming almost altogether.

Clover Demonstration Train

It is announced that a special demonstration train will be run over the Burlington lines in northeast Missouri in July. The train will carry exhibits and speakers furnished by the Missouri Agricultural College. The place of clover on the farm is the thing to be emphasized. It will be shown how clover is essential to soil fertility, how it makes better yields of grain crops; how it helps to control soil washing, as well as its importance in the breeding of live stock.

A half day will be spent at each point, giving time for visitors to examine the exhibits and hear the speakers discuss the special problems under consideration. Beekeepers are interested in the success of the matter, since the spread of the clovers will provide more pasture for the bees.

Arizona Excludes Honey

Recently a shipment of honey from Colorado to Arizona has been held in restraint pending the furnishing of a health certificate from the state of origin. In order to allow this honey to move in Arizona markets, the apiaries from which the honey came must be declared free from disease by the state of Colorado. The origin of some of the honey being held is unknown and the honey must be shipped from the state by the present owners.

Mention is made of this incident to warn Colorado beekeepers against shipping honey to Arizona, unless the apiaries from which it comes are free of disease and can be declared so by the state.

R. G. Richmond.

The Dadant Methods In Summer

By C. P. Dadant

AN excellent article would be a description of the Dadant program of management for summer. How do you build up? Do you switch? Do you put all supers on at one time and keep taking off those first on and put the new one next the brood body? What is that instrument with which you lift supers to put on escape board? See page 77 of Dadant System."

The bees build up their own colony if they have warm quarters, a good queen and plenty of supplies. Those matters are important in spring. You may feed more or less watery food, if the supply of honey is short, or you may uncap a little of the honey occasionally, to induce them to more activity. We do both.

"Switching" I take to mean, do we exchange combs from one colony to another? Yes, we do if one colony has more honey than it can consume and another is short, in the heavy breeding months. We sometimes also give a weak colony a comb of brood from a rich one, if we are sure that it has a prolific queen and that a little help will be profitable. But we keep in mind the fact that a strong colony will harvest more than twice as much surplus as a middling one. We don't want any weak colonies. We expect our honey from the strongest, those that are ready for work when the crop begins. The others, that may become strong during the crop, are more useful for increase, and it is from them that we aim to take such increase as we want.

We don't expect any swarms, except accidentally. We do not usually have enough natural swarms to make it worth while to watch the bees. This non-swarming is secured by giving plenty of room for breeding, plenty of room for supers, plenty of shade and plenty of ventilation—more than the average beekeeper usually gives. Besides, we aim to have young queens and no drones worth mentioning. This last result is secured by removing the drone-comb from the hives in early spring and replacing it with worker comb. We have a few drones, of course, from a hundred to three hundred per colony, but no quantity large enough to make the bees feel crowded, as they do when there are thousands of them.

We also believe that it is a good plan to breed from the best queens, for young queens to head our colonies, but not from swarm cells, as the colonies that make lots of honey and do not try to swarm are the

proper ones to breed from.

We do not put all supers on at one time, for it is out of the question to know how many supers a colony will need. We do not believe anyone can tell. We put two supers on strong colonies, one super on middling ones, to begin with. Remember that our supers are pretty nearly as large as a Langstroth hive body. When the crop is on, we visit the colonies about once a week. If any are likely to need more room, we give them more, but do not remove anything. We put the additional supers above the others, if the combs are not sealed; if they are sealed, we put the additional super below the others. If a colony does not appear to go into the supers and yet seems pretty well filled in the body, we give it two or three combs of super honey, taken from some colony whose supers are well filled, in exchange for some of its own super combs, still empty. This has a good effect on both. Sometimes we take a partly filled super from a strong colony and exchange it for the nearly empty super from the weaker one. When we visit them next time, we usually find both filled. We do not shake the bees out, to make an exchange of this kind. If the crop is on, there is no fighting at all. It seems to induce the bees to greater energy.

We do not take supers off, from time to time, to extract, unless the crop is of such duration that too many supers are needed and we are short of them. We have sometimes five supers on some colonies, but we are pretty certain of having some with only one or two. We prefer to extract all at one time. But if everything is full, or nearly full, we may extract in the middle of the harvest. In that case, we do not extract from the supers that contain fresh honey. I remember having extracted about 5,000 pounds from an apiary of 87 colonies and finding nearly a full crop on them within a week afterwards.

In the fall, we sometimes find it necessary to crowd the colonies a little for room, as it happens occasionally that they do not put enough honey for winter in the brood chamber. Our hives being so large, it is unnecessary to have, additionally, what Mr. Demuth calls a "food chamber." But such a chamber is good on regular Langstroth hives. If we lived in Canada, where the winters are long and rigorous, we would probably do as does our friend Mr. Tissot, at Ottawa, feed the bees for

winter, all that they can put into their brood chamber. Sugar syrup is very good winter food and it often pays to do this. I know many Canadians who always add from five to twenty pounds of sugar syrup stores to their bees' stores.

As for ourselves, we have never fed much when the bees were well supplied with honey, except in cases where they have much honeydew or much fruit juice. This happens when the crop of honey is short. We extract those bad stores to give them sugar syrup.

As to the instrument mentioned in the questions above, used to lift the supers and put on the escape board, it is just a strip of heavy pine or oak, cut so that it will fit on the shoulders or slats that support the cap of the regular Dadant hive, thus leaving a free space to slip in the escape board without having to lift the supers entirely off the hive. Some such contrivance should be devised for the straight body of the Modified Dadant or the Langstroth, which have no slats on the sides of the body. It saves a great deal of handling.

Speed, in all manipulations, is very important, when the crop is at end, for there is sure to be more or less threat of robbing if we are too slow and leave our hives open for any great length of time. We must not have anything exposed to robbers, no empty combs, but especially no combs of honey. Bees soon acquire bad habits when the crop is at end, and one must not imagine that a rich colony will be less eager for plunder than a starving one. Acquisitiveness is a quality which becomes a vice when circumstances favor it. But when the crop is on, almost anything may be done with colonies of bees, without any robbing and without any fighting. As I stated in the "Dadant System," bees are very much like human beings, kindly disposed when they have a full stomach.

Bear in mind that, if your hives are old and not well jointed, owing to age, nothing is better to keep the bees from doing any robbing and lurking at the cracks than a little clay mixed with water to plaster up the joints. It costs nothing and effectively closes all cracks when bees are excited and try to rob. Similarly, if robbers lurk about the entrances when you are removing the honey, a little fine grass, thrown upon the entrance, in which half a dozen of the hive bees install themselves to pounce upon the lurking robbers, is the best protection.

Rendering Beeswax at the Apiary

By Fred A. Parker

IN California and Nevada I have seen hundreds of combs lying around on the ground, where squirrels, mice and gophers (not to mention waxworms) destroyed most of them. I have seen over five thousand combs in one apiary that were completely gutted by waxworms. I believe much of this apparent carelessness and real waste occurs because a large proportion of beekeepers have no adequate wax melting equipment.

At its best, wax melting is a muss, laborious and exacting task. But it **pays**. Even so, I would not like to melt much wax by some of the methods occasionally described. The use of cook stoves, wash boilers, gasoline stoves, dish pans, and the utilization of steam jets from knife boilers, entail too much expense and take too much time, in my estimation. No claim is made, however, that the method here outlined is the best, for the writer has no knowledge of what some of the other fellows may have done. But, judging from the results obtained, this plan is inexpensive, speedy and effective.

It gets the wax.

For years I used this method outside, by digging a hole in the ground and using short lengths of gas pipe to support the tank. But in inclement weather, during the absence of a honeyflow, and especially when diseased combs are to be melted, it is preferable to do the work inside. The picture shows the furnace and tank installed by me in a barn. The furnace extends through the one-inch board wall. Outside, a ten-inch smokestack reaches well above the galvanized iron roof. The tank (which is supplied with soft spring water through a garden hose) is 50x31 inches and is 22 inches deep. It holds about 147 gallons. It rests on three two-inch angle irons. The furnace has a depth of 16 inches in the clear, therefore will handle fair-sized logs. There are lots of scrub live oaks on the ranch, so there is no fuel problem. After getting a bed of coals, two logs will keep the water boiling for half a day.

When melting old combs, they are placed right in the tank in the frames. About twenty-four combs are used at one pressing, varying somewhat, according to the cocoons in them. A lath or similar stick is used to lift the frames from the boiling water. There is always a place that boils free from wax, and into this the frames are thrust by hand, after they have been taken from the wax-covered water. One end first, then reversed. In this way they are

entirely cleaned of wax at one process. If combs are diseased, the frames must be freed from all infection. This is done by boiling again, this time in lye water. I have used thousands of frames thus treated for American foulbrood and had no recurring cases. I consider the burning of good frames the equivalent of burning money. No warping of frames occurs from boiling, but lying

and also prevent chilling. I would not do without a bottom spout even if I had to have one soldered on. It greatly increases the capacity of the press. Despite our best judgment, we sometimes have more wax in the tank than the presses will hold. If the remainder is left in the tank until the next pressing, there will be some crumbly, "corn-mealy" wax. If we attempt to pour some off the top with the sack open, cocoons are sure to go into the wax receptacle and clog the separator can. So the spouts are kept open while filling the presses, allowing lots of water and wax to run out, but while pressing they are kept plugged, so the water will entirely cover the "cheese." If wax begins to cool on top, draw off a little water through the spout and pour in a dipper of boiling water from the tank. When changing water, I pull out the plug and then tilt the press, pouring most of it off. When full, it is difficult to pour off without spilling some, and that "some" is wax. Water is always changed once and often twice for each pressing, owing to amount of wax on the surface (seen by blowing on it). When only a film of wax shows on the surface, further pressing is unnecessary. As soon as the water is poured off after the first pressing, the plugs are inserted and boiling water poured in. Then, with a paddle, the cheese is worked loose and toward the middle of the press, in about four motions. Thus the water gets to all portions of it, and straw or other filling is unnecessary. Directions state that the screw is put down three times and that from 90 to 97 per cent of the wax **can be** secured. If we look inside the press when the screw is down, it will be observed that there is a space of about one-half inch between the wax press can and the cleated follower that gets hardly any pressure at all. It is oozing wax all the time, and no amount of pressing, of raising and lowering the screw will get it all, unless this portion is stirred up and thrust toward the middle of the press, where it will get the full power of the screw. Water cannot properly penetrate a tightly pressed cheese. That is why we change the water. It is not practical to stir the cheese while it is covered with hot water and wax. It cannot be stirred at all when using a square of burlap.

From five to seven minutes is given to each pressing, putting the screw down fairly tight. It gets practically all the wax, because the cheese is kept near the boiling point all the time.



Cakes just the right size for the sacks around in the sunshine will warp them very quickly.

As to the **modus operandi**, it was developed by many years' experience and is a wide departure from the directions given by the manufacturers of the press. The first difference is the use of the large, wood-heated tank. Next, and very important, is the use of a common grain sack instead of an inconvenient square of burlap. The barley sacks I use are 22 inches wide and 33 long, but from 8 to 10 inches are cut from the top, leaving just enough to fold over nicely. This holds the slum-gum from getting loose in the press and clogging the spout.

My latest edition of the "A, B, C and X, Y, Z of Bee Culture" states that, "In using this press a tube was thought necessary at the bottom of the can, left open during the pressing so that the hot water and wax could run away immediately. It is better, however, to have no opening at the bottom of the can, but to confine the hot water and wax, thus preventing chilling as much as possible."

A better plan is to retain the spout



Parker's wax rendering outfit

I have used new sacks for five days of constant pressing before a change was necessary, but a little "strong-arm" stuff will burst them very quickly.

Boiling water for the presses is taken from the large tank. The small, round tank, shown in the corner of the large one, near the wall, is without a bottom, has notches in the lower end, and as it stands well above the water level boiling water may be dipped from it at any time without getting any wax or cocoons. Just as fast as one set of combs is melted and removed, another set is put in. This can is removed each time when dipping out the wax, as some always gets behind it. It is put back before refilling the tank with combs.

The skimmer, made from a five-gallon can, and shown in the large picture, sitting on the floor, is the best wax skimmer I ever used. It gets the most wax with the least water.

After the water is drawn and poured from the presses it is emptied from the wax cans into the separator can, shown between the two presses. By using the faucet, the water is withdrawn until the wax begins to go with it. When the separator can gets nearly full, the contents are poured into one of the wax moulding cans to cool. These cans are made of galvanized iron, are 8 inches deep, 15 1/2 inches wide at the top and 14 1/2 at the bottom. The wax cakes average about 5 1/4 pounds to the inch, and scales are hardly necessary in computing weight of wax. The twelve-sack shipment shown in the picture contained 63 cakes, measuring 322 1/2 inches. At 5 1/4 pounds to the inch, this figures 1691 1/4 pounds. Dadant's scales made it 1699, which shows it is very close. These cakes averaged over 5 inches thick and many of

them weighed over 30 pounds. Being so large, they cool slowly, which allows the sediment plenty of time to settle. Another advantage of large cakes is that it takes less scraping, and that is a distinct advantage when melting a large shipment.

In the morning, after a day's melting, the cans are inverted so the water will drain out. Then, after the water gets to boiling in the big tank (with the aid of two pairs of pliers, as shown in the picture,) the cans are submerged in the water up to the top of the wax, and the cakes melted loose. No soap or other lubricant is necessary. Twitching the can from side to side will show when the cake is loose. Then it is quickly dumped out on a board. The cans are then thrust into the boiling water and thoroughly cleansed.

It will be noted that the presses are not hinged to the platform on which they rest. Two small vertical strips nailed to the platform hold them in place and permit tilting just as well. This leaves them free to be immersed in the hot water and cleaned after each melting session. Two presses are used, and by using both hands they are rapidly loosened at the same time.

The milk can, also shown in the picture, is used each day at the apiaries as a scrap can, and all honey in it is safe from robber bees.

The wax cans have been in use twelve years and cost at that time 75 cents each. Were I having others made, I should have them made the same depth, but smaller, so the common grain sack could be used in shipping the wax. It is inconvenient and more expensive to have to get coffee or other large sacks for this purpose. A tinsmith I consulted recently told me the cans would now cost \$1.25 each.

Here is the cost of the entire outfit:

Tank	\$25.00
Ten cans at \$1.25	12.50
Two presses at \$20	40.00
Furnace	20.00
 Total	 \$97.50

Used the way it should be, the capacity of this outfit is 150 pounds of combs per day of eight hours. By lessening the time of pressing, considerably more can be melted in a day, but it would result in a slight and unnecessary waste. To me, wax melting is not an effort to get the most wax in the least time, but a constant endeavor to get all the wax.

California.



Beeswax in sacks ready for shipment

Package Bee Business From Shipper's End

By W. H. Moses

I BELIEVE most of the shippers of bees are honest and intend to do the right thing by everyone—that is, they try to live up to what they say (prompt delivery and satisfaction). I believe it would be a good plan to say "satisfaction to all those that can be satisfied" (some cannot). In 1922, I shipped some bees to a man in Iowa. He made a deposit of \$25.00 and asked me to ship the bees C. O. D., \$75.00. I shipped them; he paid the \$75 and charges. In a few days I got a letter from him saying the bees arrived in very bad condition, that the cages were broken open and that someone had put them in a graphophone box and that the corner of the box was broken and most of the bees were gone. He thought I should make the loss good. I did not think a man would accept a shipment in that condition, so asked our express agent to look into the matter. In due time we received an answer from the agent at the other end of the line saying the bees arrived in good condition and were accepted by Mr. —— without protest. I sent him a copy of that letter and did not hear from him any more until the next spring, when he asked for prices on bees and queens.

But that is not what bothers me most. It is when a man orders bees and wants them shipped, say April 15. About that time he writes: "Please do not ship for ten days, as the weather is so cold I cannot handle them." That puts everything out of joint, for if you ship the next man's bees it will be a few days earlier than he expects them, and you get a raking over the coals for being too fast; and if you wait until time the first bees are ready to go, that puts the others late and they roar, so it is H if you do and H if you don't.

The package business is much like a can factory where they make small cans (such as fruit cans). There are about five different machines to make one can—one to cut the can from a flat sheet of tin and the others to shape, crimp and put in the heads, so if one of them stops, all must stop. So if one man wants his bees held up for ten days or so, about the first thing that happens is, you have all your mating nuclei with young queens just ready to ship out and have cells ready to take the places when the queens are taken out, so you come in from the queen yard with the queens to go to Mr. X and find a letter saying, "Don't ship

the bees yet." That makes you say something you should not say, but what to do with the queen cages. You make some more nuclei. That is all right, but an extra expense. So after a while, when you do get to shipping again, you have to put on an extra force in order to ship twice as many bees in a day as you have been shipping. That's some more extra expense that the man at the receiving end of the line does not think of.

It's a good business when everything works as you plan it, but backing up orders, bad weather, high water, late frost, and poor help, makes you wish you were in something else.

But as a good many other things, when you once start and have everything fixed up for the package business it is hard to quit, so let's hope for the best and go ahead.

Texas.

Mistakes of Beginners

By B. A. Hadsell

I HAVE been a beekeeper for sixty-eight years and find it the most profitable rural industry with only one-fifth the capital, machinery, labor and taxes needed on a farm, but there are two very important mistakes which are liable to occur with beginners. The beginner is apt to want to increase too fast, not giving time for his colonies to build up and put away sufficient stores for winter. He is therefore liable to lose heavily by winter starvation and sell his outfit at a sacrifice.

Probably the second and worst of all mistakes he can make for himself, and the bee industry as a whole, is when he sees a neighbor beekeeper prospering, who has through several years of hard work built up a large home trade, and he believes he can compete with the established beekeeper. And he begins to extract as fast as the bees gather the nectar or sweet water, not waiting for the bees to evaporate the moisture and seal it over. He then takes it around to the old beekeeper's customers and by cutting the price below what ripe honey can be produced for he unloads his inferior stuff.

The old bee man waits until his honey is well ripened, extracts and goes to his old customers, whom he finds disgusted at the sour stuff the new beginner has sold. Therefore his honey trade is spoiled. The old bee man then turns his attention to

his large city trade that he has labored for years to build up. But alas! another unprincipled man plans to make a fortune. He rents or buys a large outfit, extracts his nectar and takes it to the association warehouse, but the secretary of the association refuses to handle it because it is soured and not fit for table use, so he unloads it on the city trade at a cut price. The grocerymen find they are deceived and try to unload it on the retail trade at prices below the cost of producing good, ripe honey. Again the old-established beekeeper's trade is ruined.

The buyer then drops out of the market for any honey. Whether he unloads to foreign market and ruins it, or whether he unloads in small jars to jobbers and they to hundreds of retail grocers, who in turn sell to many thousand customers, the market is spoiled. Apparently nobody knows why, and we wonder what is wrong with our honey trade market.

Arizona.

The Products of the Hive

"Les Produits de la Ruche" is the title of a 290-page book, by our friend Alin Caillas, the author of "The Treasures in a Drop of Honey." It is an excellent description of the constituents of honey, with analysis of honey of different localities in France, Belgium, Spain and Switzerland.

Mr. Caillas quotes Dr. Carton, who calls sugar, alcohol and meat "the three deadly foods." He sustains the view that sugar is an inert food, while honey is rich in many necessary ingredients for the nourishing of the human body.

One of the most important items in the book is the description, with microscopical colored engravings, of the appearance of the leading pollens, such as those of sainfoin, clover, sage, black locust, basswood, orange, buckwheat, etc. He avers that the detection of those grains of pollen floating in any kind of honey is the best test of the origin of that honey.

Chemical tests are given, of honey and of beeswax. A lengthy description of propolis is also given.

The last thirty pages of the book are devoted to instructions on the making of metheglin. This is a very popular drink in all countries of Europe, which would be interesting to American beekeepers were it not that all intoxicants are prohibited in this country.

The book may be delivered to American readers for approximately \$1.50, postpaid.



Apiary of H. H. Bordelon at Marksville. Mr. and Mrs. Bordelon in center foreground

Attractions of Louisiana

By M. G. Dadant

ATE January is scarcely a time of year to form snap judgment of a country by passing rapidly through it on a train, taking one's impressions from the gray and barren ground, and all lack of green things to give tone to the landscape. But it fell to me to take such a trip at such a time through Arkansas and Louisiana. The first impressions might be registered of swampy, desolate country, bathed in rain and gloom, with little activity in the fields.

My first impressions of an awakened South, however, came at the Little Rock meeting, where the extreme optimism of the beekeepers could hardly help impress those of us from other states, that there must be here natural resources which were now being probably as rapidly developed as in any section of our country.

A daylight trip from Little Rock to New Orleans gave a panorama of changing climate and changing soils. First a glimpse of the Ozarks at Hot Springs, then the winding Ouachita with its surrounding swamps as it entered Louisiana. Then into the pine lands of northern Louisiana; back into a bit of swamp at Monroe. Pines again for miles, then a swamp again as we crossed the Red River, with the pines on either side, and then finally into that vast alluvial basin of east-central and southern Louisiana, all of it relatively low lying, much of it leveed against the Red, Mississippi and other rivers by

league-long levees and having its drainage outlet into the Gulf directly through countless bayous and sluggish streams.

We arrived at New Orleans at dusk, our train being ferried across

and one of the most historic cities of the New World, from a three days' stay. Such a stay only gives one the desire to return again during the warm winter season to spend a month in getting really acquainted with the multiple charms of that great inland port.

But it is of the interesting and delightful two-day trip from this port into central Louisiana, and with the beekeepers, that I wish to speak.

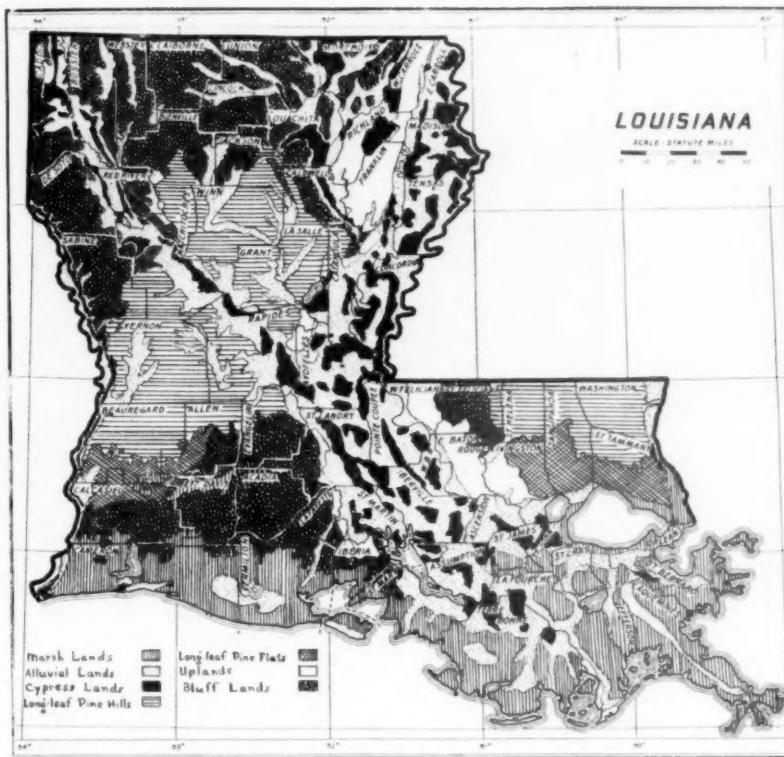
An evening train ride with H. P. La Blanc, queen breeder and beekeeper, as conductor of the train and hospitable host, landed us in Baton Rouge for the night.

Baton Rouge, that old, yet young city, old in much of its architecture; its youth epitomized by the modern Louisiana State University located there. Three years ago the state's highest officials realized their present university and campus could never accommodate the new diversified agricultural demands of their state, and set about to remedy the situation. A new site of 2500 acres for a university was located, \$50,000 worth of landscaping was done. Then the old buildings were deserted in their entirety and the educational facilities moved into the new seat of learning. When we were there, at early morning, the students were just hurrying to classes. Other students were caring for a prize herd of pure-bred cattle, there, in a country where green forage is the principal feed, even in January. On the campus, dozens of college buildings had



Gaspard yard. John St. Romain in foreground

the broad Mississippi just as the big car ferries of the northern lakes make their trips across those bodies of water. It would be useless to try to give an impression of this big city, second largest port of our nation



Louisiana map showing typical soil areas

sprung up in those three years' time, and the huge mechanism of a growing university was in operation.

The white clover on the campus was knee high and countless blossoms were already appearing. I never have seen a more luxuriant growth. But I was more surprised to find that clover is not a very good yielder of honey there. Such a stand in Illinois would presage a "white clover year." Our stay in the city was short, but gave us time to visit Director of Agriculture Wilson, State Entomologist Anderson, in charge of bee inspection, and Dr. Gates, who was mentioned in our March number in connection with his address on genetics as applied to bees, at the New Orleans convention.

The trip continued from Baton Rouge in a Ford coupe, with a foursome consisting of friends Le Stourgeon, Dalton, Bond and myself, and ended with a real Creole chicken gumbo feast with all the trimmings at the home of our last good hosts, Mr. and Mrs. Henry Bordelon, at Marksville.

The ride from Baton Rouge into Avoyelles Parish was made over delightful gravel roads with often-changing scenery. We saw oxen in use to draw the huge cypress logs from the swamps, where neither machinery nor horses could long "navigate." Natives along the road were dipping for crawfish in the side bayous, and an occasional apiary was usually jammed right against the swamp, because its main sources of

sustenance lay there. By evening we reached the Dalton home and had the pleasure of gathering cabbage, lettuce and onions from the garden, all the while thinking of the folks at home stoking the furnace to keep down the chill of a late January bliz-

zard. Here again Mr. Dalton's herd of purebreds were on green feed, with a heavy milk production in mid-winter.

Avoyelles Parish is, I presume, a typical one of central Louisiana. It is at the confluence of the Red, Mississippi and Atchafalaya rivers, with long levees to hold back high waters. The houses in the levee district mostly face the levees along a main thoroughfare. It is said that news can be shouted from one house to another for a distance of thirty miles. Most land tenure is in narrow strips, facing the levee and running back into the swamps in the interior.

The bees were busy on the maples when we were there and brood was well scattered in the hives, a period of activity, we were told, which runs pretty well till late in the fall, many times until late November.

The maples bloom abundantly in late January, followed by the February bloom of elms, fruit trees and sweet gums.

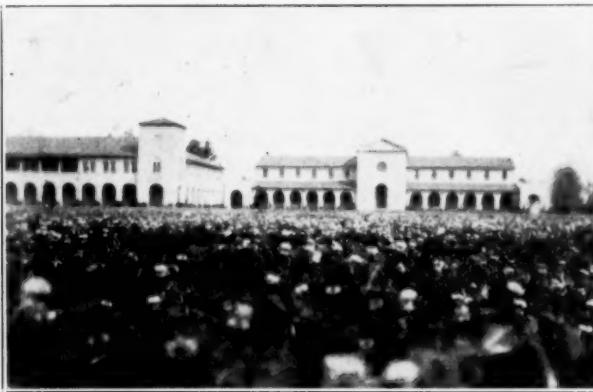
The willows in March, the black locust of April and May, and the commonly called "button willow" of June share the stage as the heavy yielders of the first half season.

Pepper vine, balloon vine, heart-ease, the bonesets, asters, all bloom in the latter half of the season, ending with the Spanish needles late in the fall.

A glance over the honey yielding sources shows a predomination of tree yielders, plants thriving chiefly



Campanile at Louisiana State University



Clover in front of cafeteria in center background. Peabody Hall to the left. L. S. U.



White clover in bloom February 1, 1927. Louisiana State University Campus. Library building in background

in moist or wet ground. This is to be expected because the swamps, as before mentioned, furnish the crop for the Louisiana beekeeper.

Rich land both in fields and swamps, great humidity, large uncultivated areas, and a long season; no wonder Avoyelles Parish is claimed as a beekeepers' paradise, and that there are over twenty-five commercial shippers of bees located there, probably as many as in any similar area in the country. The bees were nearly all of them of almost golden color, and were remarkably even in color, with few mismatings. The shippers claim that the demand is largely for yellow bees and that they try to cater to it.

We spent all of the second day visiting beekeepers in the parish, having our visits interspersed with hospitable "teas" by the ladies, at every stop, with a lunch at noon at the Mayeux home. Only their tea is not tea, but a coffee which is as black as your hat and twice as strong. The writer will have to confess that after about the sixth stop that day Louisiana coffee had ceased to have the attractions for him that it did for those who have it for a steady diet, and who seem to have unlimited capacity for it.

This is the heart of the nucleus shipping area. Probably 75 per cent of the bees shipped go in packages containing at least a clustering comb.

The section is entirely free of bee diseases, and has been for several years. In fact, the report of the chief inspector, Mr. Anderson, shows only nineteen diseased colonies for the state in 1927, all of which were promptly burned, hives, combs, bees, honey and all. In fact, the complete "burn up plan" is all that has been practiced since inspection was first inaugurated, several years ago.

Their success leads one to wonder whether a similar rigid program with similar complete cooperation on

the part of the beekeepers would not sooner lead to a cleanup in our northern states, where the progress of eradication is slower.

Production of honey is a secondary consideration down there. The ship-

ment home. The apiaries of the Mayeux boys, Bond and Dalton, Coincon, St. Romain (J. L. and John), Gaspard, Carpenter and Bordelon were among those visited in the course of the day.

Let not the reader imagine that I hold a brief for Avoyelles Parish in Louisiana, excepting as it epitomizes the beekeeping opportunities of Louisiana and of the South, known as the alluvial cultivated and swamp lands. Refer to the attached map. Follow the course of the Ouachita, Red, Mississippi and Atchafalaya rivers. All of those black spots are cypress and gum swamps, abounding in honey-producing flowers and surrounded by the dotted alluvial cultivated lands, and you have a bird's-eye of a bee paradise.

But the country is not without its drawbacks both for beekeeping and for living. Constantly encroaching floods from the headwaters of the North, abetted by a too liberal deforestation there, make a menace which must be met by consequently enlarging levees to hold back the piling streams. The humidity is great, rainfall reaches 60 inches a year, and the fact that I saw a mosquito or two while there did not lead me to believe that they were absent later in the year.

But after my visit I could not help but be impressed with the vast unused resources of this state, which has its counterpart in many other sections of our great country in spite of the development of the last two hundred years.

Above all, I cannot close without remarking the apparent hustle and activity of Louisiana from its officers to its people, and the determination on their part that their state has only "begun to fight," which should presage great days ahead for the region.



Top, left to right—John St. Romain, C. A. Mayeux, Dadant, L. J. Bond, C. H. Carpenter. Bottom—E. G. Le Sturgeon, J. L. Gaspard, Dalton, F. M. Morgan.

ping business predominates. The breeders are content to book orders for bees to capacity, "rip open" their colonies to keep up with their orders, and spend the balance of the year in getting new combs drawn, the colonies rebuilt and such increase made as is desired, with some honey thrown in.

There was a sort of "thrill" in making the acquaintance of F. M. Morgan, of Hamburg, a man whose name I had remembered writing ever since I was old enough to help address correspondence when it was all done by father and the children

Personal Recollections of the Editor

MY BOYHOOD DAYS—No. 3

FOR several years, all that we had to make a living, was the product of our little farm. The apiary was growing fairly well. But only a little honey could be sold, as the tendency of my father's efforts was towards more bees. He had purchased an Italian queen from a Mr. Gray, of Ohio, and these beautiful bees gave him the desire of trying their importation himself, which he began in 1868, ordering from Dr. Blumhoff, at Biasca.

Meanwhile, as I was the only one of the family who could talk English at all, I was entrusted with the sale of our product, vegetables, berries, both wild and tame, sweet corn, melons, etc. It was before the building of the bridge across the Mississippi, and in order to get to Keokuk, across the river, early in the day, it was necessary to get to the ferry landing at 6 o'clock, for after the first trip the ferry remained two hours idle. So I had to get up about 4:30, feed my team, eat my breakfast, hitch up and go by five. I used to pass by the present site where we now live, at sunrise, and often admired the beautiful view of the sun shining on the river and the Keokuk hills, without foreseeing that I would own it some day. I would reach the river just in time to cross on the boat and get to the market at 6:15. When I had only a small lot of truck and could carry it in two baskets, I would leave my team tied to some small tree on the Illinois shore and cross on foot, for it was only four city blocks from the river to the market. I always found ready sale; for our produce was always clean and sound and our berries were as good at the bottom of the quart box as at the top. It always pays to furnish good goods.

As I was small for my age, until I was about 16 years old, I could come across the river free of charge, for old Captain Van Dyke never charged children anything. But one nice morning he came to me and held out his hand for the dime. That put me among the "grownups" and I remember how proud I was to know that I was a "man" henceforth.

Since I was doing the selling, what little cash we possessed was always in my pocket. I don't know whether it is a good method to entrust a boy with responsibility so early, but I do know that the knowledge that the small amount of money that I carried was the only thing that could secure the absolute necessities of

life for the family held me strictly to a careful husbanding of this money. I would no more have thought of buying a dime's worth of candy, when I was fifteen, than of throwing that money in the Mississippi. Thus I learned to pass in front of a shop-window full of desirable things without giving even a thought to the possibility of getting them. This has remained with me through life, and some people imagine that I am stingy because I don't see the need of buying anything that is not necessary.

In 1868, the honey extractor, invented by Hruschka a few years earlier, was described in the American Bee Journal. We had one built, right in our own town, by the blacksmith and the tinner, and I told, in the August, 1925, number of the American Bee Journal, of the great disappointment I had in trying to sell the first few pounds, because the honey, which was from white clover, was so very nice that the druggist to whom I offered it was of the opinion that it was nothing but sugar syrup. I did not yet have enough "gift of gab" to be able to tell him just how it was harvested and that this was a new discovery. I was badly disappointed. But nevertheless, a little later, we tried the grocers and finally found some men willing to buy our product.

In August, 1869, when we had some sixty-five colonies, a big crop of honey came. My father was sick, but he realized that the warm, moist weather must be good for the harvest of honey, and he urged me to look after the bees. I did it rather hesitatingly, for up to that time I had always followed his lead and had never tried to open a hive of bees by my lone self. But I gritted my teeth and went to work. What I saw made an enthusiastic bee-keeper of me. What supers were on the hives were full. In some hives that had a cap on, but no supers inside of that cap, the bees had built combs clear across the caps and were filling them fast. Fine white combs and fine white honey. I had to hire a carpenter to help me make boxes, for the little one-pound section was not yet invented. We used home-made, five-pound boxes, with glass on one side. It was then that we began to make half-story frames and supers. It was imperative to use a guide in those frames in order to have the combs built straight. Whenever we failed to do this, we had ill-built combs, for comb foun-

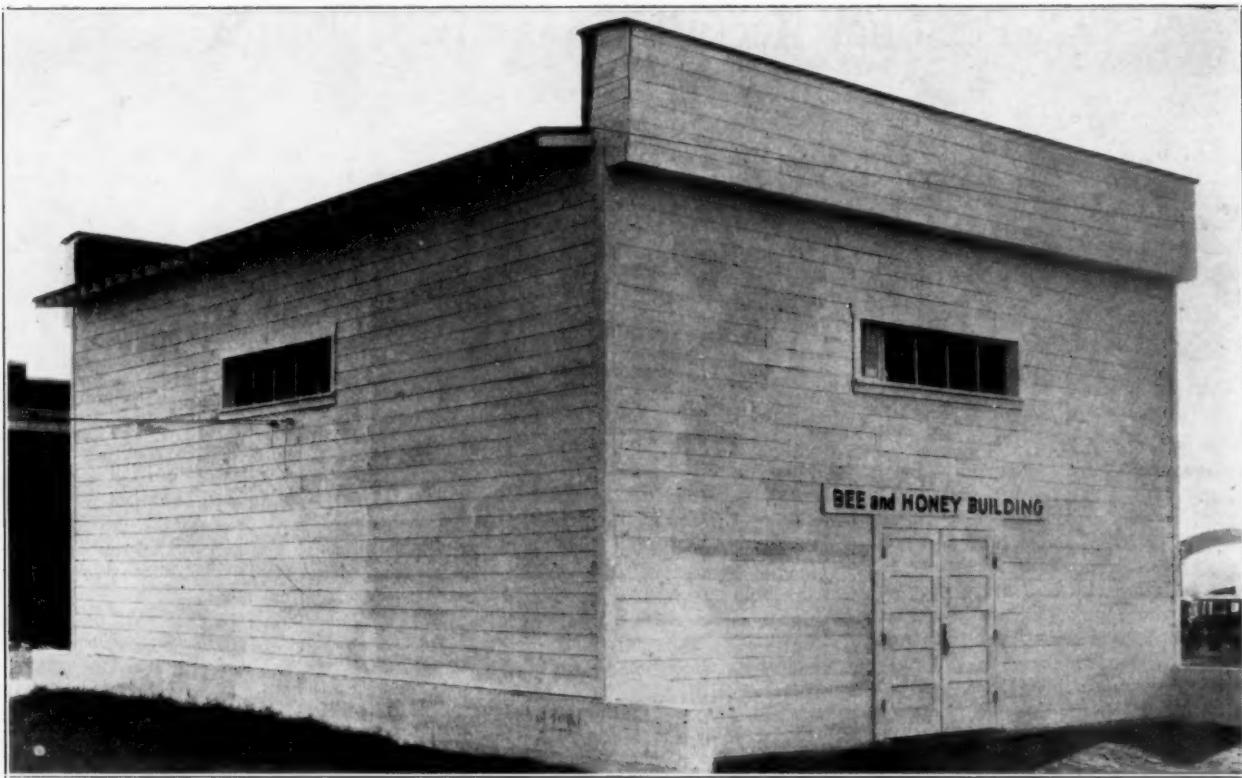
dation was not yet invented, or at least not yet made practical. It was eight or nine years before we used any of it.

I don't remember just what our crop was that year, but none of our largest crops ever gave me again the exultant feeling I had during that summer when the bees worked so faithfully. Yet, the handling of the bees without a smoker, but with just a strip of punk or dry, rotten wood lighted on the end, was not a pleasant task unless one took great precautions. It was then that I learned to appreciate Mr. Langstroth's assertion that "A honeybee when heavily laden with honey never volunteers an attack," and also that "Bees, when frightened, usually begin to fill themselves with honey from their combs." During a heavy harvest the bees are usually all filled with honey during the day and they are much less prone to sting. If they are not filled with honey, they may be caused to fill themselves, by using smoke. It is true that it is not necessary to compel them to fill themselves if one knows how to handle them; but for the beginner those axioms expressed by Mr. Langstroth are invaluable information.

From that time on, I have had no fear of bees. But we nevertheless needed to work our fields a little longer before we could make bee-keeping our sole occupation.

I became much interested in my father's efforts to spread the Langstroth and Quinby ideas of beekeeping abroad. His subscribing to the French bee magazine "L'Apiculteur," and his attempts at introducing American ideas in that magazine, with the rebukes he had to suffer, enlisted my activity in his behalf; but nothing worth while was done till Mr. Bertrand, of Switzerland, began the publication of his "Bulletin D'Apiculture," which later became the "Revue Internationale." This spread practical beekeeping all over Europe. The German already had some practical ideas, but the Dzierzon and Berlepsch hives actually held back practical progress on account of their clumsiness.

I will end these boyhood recollections by stating that I was married at 24, that my wife was fully as willing as I was to work towards success. So we reared a family of beekeepers. Now, they can speak for themselves and we can take a back seat and watch them work.



Bee and Honey Building at Oklahoma State Fair

Building For the Bees

By Glen V. Mills

WE have no patent on the apiary building on the Oklahoma Free State Fair Grounds. Nothing would flatter us more than to have others copy, and contribute thereby to the uplift of the bee industry in their midst.

Two years as promotor, writing a weekly column on bees for a local daily, besides hours of conversation with all who would listen, to work up public interest; then forty days as architect, superintendent of building, carpenter and laborer in its construction, has made me conversant with its story.

At the 1921 fair, and again in 1922, Mr. Holekamp, of Webster Grove, Missouri, acted as superintendent of the Apiary Department. Both of these years there was only one exhibitor, with twenty or thirty pounds of honey and about a dozen honey plants and, as I remember, a standard hive and a few sheets of foundation. Mr. Holekamp each year tried to put on a show by giving a few minutes' talk daily in a wired cage among the bees, but a man over on the midway outdid and outbid him by doing fool stunts, making wigs and flowing beards with bees. I was told that, like Bosco, he ate them alive. This last statement is hearsay, for as I was interested in

Mr. Holekamp's talk, I did not visit the chamber of freaks.

At the 1923 fair, Mr. Diemer's first year here, there were two exhibitors, with about one hundred pounds of honey and the same annual dozen of honey plants.

Having a couple of colonies of bees, and being a botanist and wishing to display my "larnin," I told how I was going to pull down the blue ribbon on flowers the next year. Artie Clare filled Diemer up with a fine supper and I induced him to give twenty, fifteen and twelve dollars for the first three prizes on honey plants. Well, I got the twenty, but the other guy divided his plants, entering part in his own name and part in his wife's name and pulled down the twenty-seven. He gave me the ha-ha, telling me that, like the parrot, I had talked too much. Yes, they had a parrot there, our exhibit being across a runway from the caged birds and uncaged parrot. That bird spent more of his time tipping over those few honey jars than he did in talking.

Well, we builded the apiary building and in 1925 I was there with three hundred pounds of honey, on which I took eighty dollars in prizes, and my three hundred honey plant blue ribbon added five dollars more,

Diemer having reduced the prize money for fear a certain dark-complexioned man and myself would exterminate the wild plant life in getting our specimens. Our first year in our building, over one thousand pounds of honey was exhibited by seventeen exhibitors, sometimes two or more members of a family having displays.

At the 1926 fair over three thousand pounds of honey was on display and some families were represented which would have given the great Roosevelt pleasure.

Artie Clare and I are partners, not competitors, and we had nearly one thousand pounds of honey, forty pounds of beeswax and three hundred honey and pollen plants, honey vinegar and honey preserves, and four colonies of bees in our exhibit. Yet, we took only third on display, which shows what an exclusive apiary building can do to build up an exhibition of the bee industry.

Owning our own building (the only exhibitors so situated, as all other exhibits are shown in buildings owned by the fair association), prevents the abandonment of the Apiary Department, as was done by Oklahoma City at their 1926 fair. Nor are we kicked from pillar to post, keeping company with parrots

one year and dividing honors with the occupants of the kennel the next.

In planning our building, we multiplied all the dimensions of a standard Langstroth hive by 24, making the dimensions of the cement bottom board 30 by forty feet and the hive body 18 feet high. This gives us two floors 30 by 40 with 10-foot ceilings. With the conception of the idea of building was coupled the thought for its payment, all to be benefited to pay their share—bee men, supply dealers, and the city.

At the 1926 fair, all space on the lower floor was filled to overflowing with exhibits. The upper floor had a screened room for bees and another screened room to show an extracting plant in operation. The rest of the room was used for bee supplies and judges' table. At this table Artie Clare and Mrs. Trough served a picnic dinner to our honored guests, Dean Dowell and Professors Scholl and Rude, of the A. & M. College, and J. F. Diemer, of Liberty, Missouri. A number of bee men were present at the spread, and each one in turn was called upon to give a talk.

No, bee buildings do not grow on trees. They have to be paid for. The fair association withdraws 25 per cent of all premiums given in the Apiary Department each year and places that sum to the credit of the building fund; to this is added 10 per cent charge on all honey sold in the building during the fair. I promised the fair association that if they would back the material bill the bee men would erect the building. One apiarist, working at a night job, gave us a part of four of his sleeping days, and another furnished a laborer two days. I worked alone until the city became interested and gave us about two hundred dollars in labor to enclose our building for the 1925 fair—that fair of rain and more rain and the \$11,000 deficit. The only sweet memory of that fair was the visit of Mr. C. P. Dadant.

So our great exhibit of 1926 was shown in a building without a ground floor and without the brick veneer on the outside walls.

Three years I have worked to have a dream come true—a completed apiary building—the first and only one in the United States. Let us hope that I will find a way, and when Artie Clare serves her dinner to our 1927 guests that this memorial to Langstroth may be completed, a living monument to modern beekeeping.

(We do not make it a custom to urge help for a local improvement, whether of a particular state or county. But here is an instance where a very worthy man found himself short in trying to help bee ex-

hibits. They need help and ought to have it. So we publish Mr. Mills' story of how they happened to build a bee and honey building at the Oklahoma Free State Fair Grounds. The week of the 1925 fair was a week of rain, which kept people out of the fair grounds, hence the present condition.—Editor.)

Dipping Queen-Cells

The queen breeder who dips his own queen-cells finds it rather a tedious process to dip them one at a time. Herman Rauchfuss, of Denver, Colorado, has made an ingenious device for the purpose of dipping them in wholesale quantities. The picture will give a better idea of it than a page of mere description. Over a pan of hot wax is placed a wheel-shaped arrangement that holds



Device for dipping queen cells in quantities

strips of pegs. As the wheel is turned with a crank the pegs pass through the hot wax and take up a thin coating. At each revolution more wax is added until the covering is thick enough to make a good cell-up when removed. Five pegs are fastened to each strip, which swings clear and turns downward as the wheel revolves. More than five dozen cells are thus dipped at one operation.

As can be seen from the picture, the whole is lifted above the pan when the dipping is finished. When in use the crosspiece above the wheel rests upon the upright strips of wood and holds it at just the right height to permit the pegs to reach the wax.

The pegs must first be wet to keep the wax from sticking. The temperature of the wax must be kept high enough to remain liquid, but not hot

enough to melt so fast as to remove previous coating as the wheel revolves. The right temperature will be apparent with a little experiment.

Granulated Honey In Bags

In our January editorials we mentioned having received granulated honey from New Zealand from Fred Baines—it should be Baines. His letter follows:

I was very pleased to receive yours dated November 19, 1926, and to learn that the "pat" honey reached you safely. I am surprised that it was "rather soft" when it arrived; it should have been as hard as a brick.

This class of package, of course, can only be used for quick sale in the winter, and the apiarists who sell in this form know to a fair margin the requirements of the grocers to whom they sell. I could tell you of some funny experiences retailers have had, to whom the package was a novelty, and who left a pile of beautiful bricks of honey in the window, when the sun came out and—you can guess. But those who know how to handle it get rid of a very large quantity.

It occurs to me that with your cold climate from October to March this form of package could be used easily.

The honey, which evidently is to your taste, came from white clover from the Canterbury district of the South Island and is characteristic of the bulk of honey raised in that end of the dominion; that raised in the North Island, except in certain parts, is rather inclined to be coarser in grain, darker in color, and stronger in flavor, owing chiefly to the fact that more bush is standing, and a large amount of New Zealand flora yields honey. I do not know any North Island beekeeper who retails "pat" honey; it doesn't seem suitable for the process.

Fred C. Baines.

Honey as Preservative of Purple

"At the taking of Susa, Alexander found in the palace forty thousand talents in money ready coined, besides an unspeakable quantity of other furniture and treasure, amongst which was five thousand talents' worth of Hermionian purple that had been laid up there a hundred and ninety years and yet kept its color as fresh and lively as at first. The reason of which, they say, is that in dyeing the purple they made use of honey, and of white oil in the white tincture, both which after the like space of time preserve the clearness and lightness of their lustre." — Alexander in "Plutarch's Lives."

Southwestern Honey Sources

By Frank C. Pellett

(This is the last of a series of articles which started in October, 1925)

Wild Alfalfa or Deerweed

WILD alfalfa (*Lotus glaber*) has several other common names. It is called deerweed, deer-clover, wild broom and tanglefoot. It gets the name wild alfalfa from a scant resemblance to the cultivated plant. The stems are woody and reed-like, with scant covering of leaves. The photo shows how slight is the herbage. The yellow flowers, later turning red, appear from June to September. In some sections, earlier, Richter says January to August.

This species is a native of California, being found in the hill country and mountains near the coast. In southern California it is widely known as a source of honey of a light color.

In the bulletin on "Honey Plants of California," it is mentioned as a very erratic honey producer. It is said in some years to produce more than the sages on either the coast or valley side of the coast ranges, while in other seasons the crop is light. It is mentioned as one of the main sources of nectar in the Coalinga district.

In its pure state, wild alfalfa honey is said to granulate readily, but is often mixed with honey from sages or other sources that retard granulation.

Wild Radish

The wild radish (*Raphanus sativus*) is simply the common garden radish run wild. Perhaps it would be better to say that the garden radish is an improved variety of the wild form. It is a European weed which is now common in many parts of the United States. The pungent fleshy root is much smaller than the cultivated ones in the garden and is much less palatable.

The radish is found as a weed about old fields and gardens and in poorly cultivated land both east and west. It is generally distributed in several California localities and has been mentioned especially in the towns and cities about San Francisco Bay. I found it particularly abundant in the young orange groves near Yuma, Arizona, where it was blooming in late February. The bees were busy on the blossoms at that early date, when fresh nectar and pollen are especially valuable to stimulate spring brood rearing.

In localities where garden radishes are raised for seed a sufficient area may be available to provide nectar in considerable quantity, but, generally speaking, the wild radish as well

as the cultivated form is a minor source.

The Star Thistles

Several good honey plants have come to us as weeds from Europe.



Wild alfalfa—deerweed

Among the number may be mentioned the star thistles of California. Although these plants are closely related botanically, they are quite



Wild radish

different in appearance. Through the kindness of Prof. G. H. Vansell we are able to show all three of these thistles in one picture herewith.

The Napa thistle (*Centaurea meli-*

tensis), number one in the picture, is also called tocalote. Like the others, it came from abroad and has been widely scattered on the Pacific Coast. It is called Napa thistle because it was first introduced at Napa and has been distributed from there. It is a pest in the grain fields and one of the most troublesome weeds of the region.

Richter quotes B. B. Hogaboom to the effect that it yields a light amber honey of good flavor and fair body in Sacramento county. (Honey Plants of California.) He states further that the thistle is abundant on the sage ranges of Ventura county, but does not yield nectar there.

The purple star thistle (*C. calcitrapa*) is less widely distributed. It is found usually in uncultivated lands and waste places and is less troublesome than the preceding. It is found not only in California, but also in New York and southward to Virginia. This species, shown at number three in the picture, is apparently not of much importance to the beekeeper. It is frequently mentioned by California honey producers among other honey plants, but I have found no references to it as a source of surplus honey. Perhaps with its wider distribution it may in time attain more importance as a bee pasture plant.

The other one is yellow star thistle (*C. solstitialis*), which is number two in the picture. This is also commonly called Barnaby's thistle. It is sometimes known as Russian thistle, but is a very different plant from the one widely distributed over the northern plains and which is known by that name.

It came originally from Europe and is now found from Massachusetts west to Iowa. However, it is only from California that we hear of it as an important source of honey. The bright yellow flowers give rise to the name "yellow star thistle," by which it is best known to the beekeepers of the West.

In the American Bee Journal for October, 1918, C. D. Stuart told something of the history of this weed in California.

Especielly interesting is his statement that from one-half to three-quarters of the Butte county honey crop comes from this source, an average of sixty tons of star thistle honey being gathered there.

The blooming period is from mid-summer until frost, offering a slow but long-continued honeyflow. The honey is light in color, with greenish

yellow tinge, of heavy body and extreme sweetness. Buyers favor honey from this source, offering a premium over the best light amber honey. It is classed with the best white honey in the market.

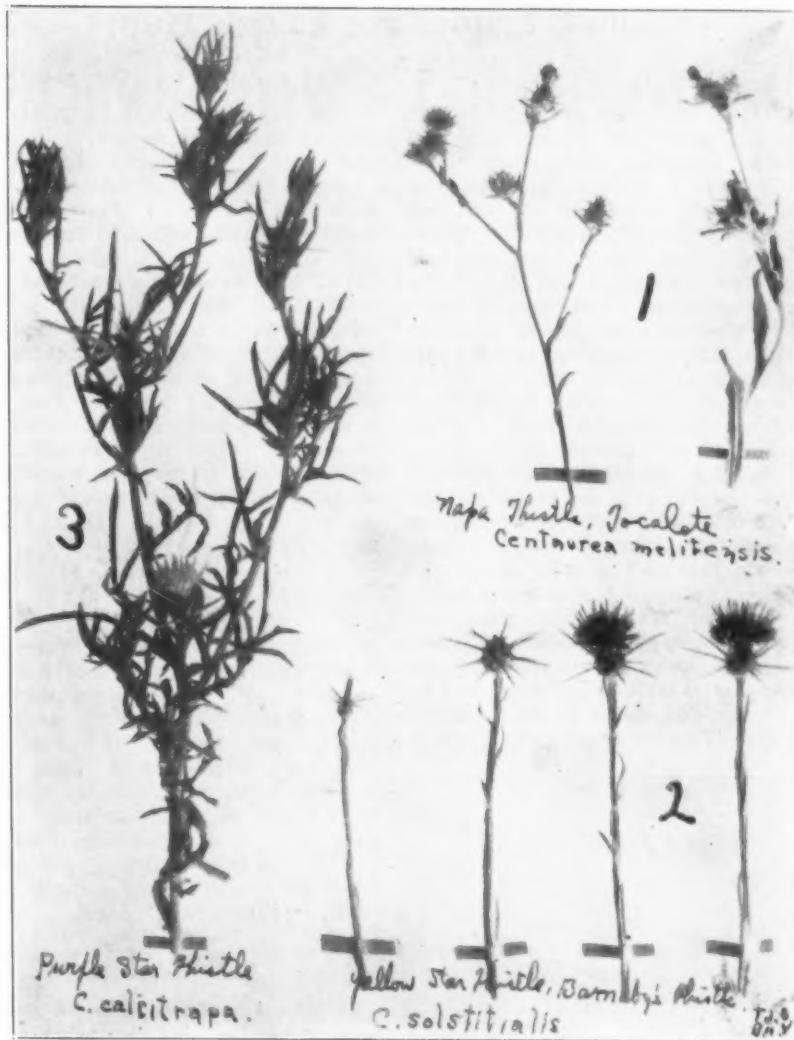
The Leading Wax Producing States

By Don B. Whelan

If one were to speculate upon which states, in this country of ours, lead in the production of beeswax, he would probably say that they are the states that also produce the most honey. There should be a correlation between the production of honey and the production of wax, for it takes colonies of bees to produce them both. Just as the census reports are a basis for the information on honey, so also they will serve as a medium of information on the production of beeswax. The states that ranked first in 1859, in the order of their production of wax were North Carolina, New York, Alabama, Tennessee, Virginia (including West Virginia), Missouri, Kentucky, Georgia, Illinois and Ohio. The same states ranked highest in the production of honey, although not in the same order. North Carolina was second in the amount of honey produced, but led in the amount of beeswax produced. Ohio was sixth in honey production and tenth in the production of wax. Here we also see Missouri as the only western state.

In 1900 the ten states that ranked first in the production of wax were Alabama, Texas, North Carolina, California, New York, Tennessee, Illinois, Georgia, Missouri and Pennsylvania. Here we find that Texas, California and Pennsylvania have replaced Virginia, Kentucky and Ohio, giving two more states in the region west of the Mississippi River. North Carolina had failed as among the first ten in honey production this year, but stood third in the production of wax. Other states that were in the high ten as producers of wax, but failed to land a place in the big ten in honey production, this year were Tennessee, Pennsylvania and Georgia.

In 1920 the high ranking wax-producing states were California, Texas, Alabama, New York, Iowa, Wisconsin, Colorado, Georgia, Tennessee and North Carolina. Three mid-western states here have replaced two other mid-western states and one eastern state when Iowa, Wisconsin and Colorado replaced Illinois, Missouri and Pennsylvania. All of these were among the ten leading honey-producing states except Georgia.



The Star Thistle. Photo by G. H. Vansell

On the whole we find a direct correlation, as we would expect, between the largest honey-producing states and the largest producers of beeswax. Among the reasons that some states show a falling off in their production of either honey or wax may be local conditions such as seasonal influences, nectar secretions, severity of winters and prevalence of disease.

Nebraska.

Simple Uses For Honey

The use of honey in home cookery will provide many tasty dishes which will add a pleasing variety to the menu. Honey sundaes are suggested to the housewife as being appetizing and easy to prepare.

Honey alone makes a delicious sundae when slightly heated and poured over vanilla or chocolate ice cream. Honey nut sundaes may be made by allowing for each serving two tablespoons warm honey and twelve salted pecans, ten salted almonds or one tablespoon of chopped

nuts, suggests B. A. Slocum, extension specialist in bees at the State College of Washington.

For a honey cherry sundae allow for each serving two tablespoons warm honey, three Maraschino cherries cut in strips, and one teaspoon chopped nuts. Combine two tablespoons diced pineapple (either fresh or canned) and three tablespoons warm honey for each serving of honey pineapple sundae.

A honey fruit sundae may be made by combining one-half tablespoon each of diced orange, pineapple, strawberry, Queen Anne cherries, banana or other fruits available, with three tablespoons warm honey and one teaspoon honied whipped cream.

Honey may be used in all types of cooking, from the cocktail to the dessert. Its use in muffins, cookies, salads, etc., may be extensive. Honey is more than a spread—it is an important food which the housewife is urged to use more widely in cooking.—From the Extension Service News, State College of Washington.

Shallow Frames For Chunk Honey

By A. O. Smith

To fasten foundation in frames for producing chunk honey, I use a ladder-like arrangement made as follows: Take inch strips two inches wide and three and one-half feet long for the uprights. Three pieces fifteen inches long, one-half inch thick and three inches wide for the cross-pieces. Nail the first cross-piece about sixteen inches from the bottom of the uprights at an angle of about ten degrees. Nail the others above this one about six inches apart and having the same angle. Drive a nail into each upright three-fourths of an inch below each end of each cross-piece to rest the frame on. Set the ladder in an old tub to catch the drip and lean the top of the ladder against the wall against which the tub is sitting. Have ready your foundation, frames and clear, hot wax. The vessel in which the wax is melted must have water in it to keep the wax from scorching and to raise the wax up so it can be easily dipped. Have a spoon with a crook

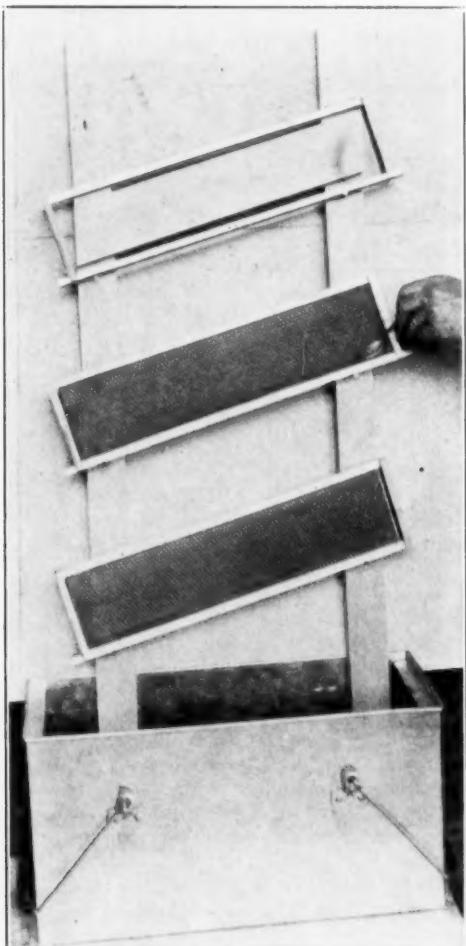
in the handle that can hang on the side of the vessel to use in dipping the wax.

Place frames in position on the nails and then put a sheet of foundation in each and the cross-piece will hold it in place. Take a spoonful of the wax and pour along the foundation, beginning at the higher end, and the wax will run down along the foundation, and the surplus, if any, will run off the lower end into the tub. By the time the last one is poured the first will be cool enough to remove. Clasp the bottom of the frame in the center with one hand, allowing the fingers to extend on one

side of the foundation and the thumb on the other, and turn the frame right side up and place in the super. Put another frame and sheet of foundation in its place and fasten. Then lift off the second one, which has cooled by this time, and continue the process. In a short time one becomes an expert and it is surprising how many can be fastened in a short time. If left stand until the wax is allowed to thoroughly cool, the supers will stand hauling to outyards and if reasonable care is used there is little trouble from foundation falling down.

I learned this method from Mr. Louis H. Scholl, of New Braunfels, Texas, and as I am sure he doesn't have it patented I pass it on.

Indiana.



Upright ladder with slanting rests for frames to fasten foundation for chunk honey.

Honey In School Text Books

By J. Skovbo

GEOGRAPHY for Beginners" is the title of a book which my young hopeful this year commanded me to purchase for him for his third grade work. Just why it was named geography is possibly a secret still reposing in the bosom of the author, as it might with just as much logic have been wished on beginners in any of the other sciences, the main headings being: "How Houses Are Built," "Heat and Light," "The Clothes We Wear," "Our Food and Drink," and "How People Work for One Another."

It is not my intention, however, to attack either book or author. My object is to object to the author's failure to mention honey among the many staples treated. These are as follows: Corn, wheat, oats, rice, fruit, sugar, cattle, hogs, poultry, fish, milk, oils (four chapters devoted to various oils), coffee, tea, cocoa. But no honey; no mention even of bees in connection with the production of fruit. Oh, yes, after a careful search I found the word "honey" appearing just once in the book, this in connection with sugar. After explaining at length the production of the various sugars, including maple sugar, the questionnaire following the lesson contains the following: "Would honey or molasses take the place of sugar? Did you ever make syrup out of sugar?" Both questions appear in the same paragraph.

Is that not fine publicity for us beekeepers to have taught in our public schools? First, failing to instruct the children about one of the oldest, purest and healthiest of all foods while devoting liberal space even to harmful stimulants; and, as though that in itself was not insult enough, asking the question if honey and molasses would take the place

of sugar. Apparently the answer is intended to be negative, or at best it will tend to create a doubt about the matter, regardless of the fact that until recently they did occupy the place now monopolized by sugar.

And then that second question, with its veiled, malicious suggestion! The fact that both questions appear in the same numbered paragraph indicates beyond any doubt that a connection is intended; and if the author had deliberately set out to create vicious propaganda against the honey industry, could any much better have been chosen than these subtle, ambiguous questions?

Is our industry then not worthy of mention in a text book of this kind for our children, failing to rank even with maple sugar and peanuts, and foreign harmful stimulants, not to mention our natural competitor, the granulated sugar industry? I realize that this book may not be in use in many states, and that honey probably is being given its deserved credit in other books available. But what assurance have we that such is the case? Are we making any organized efforts to affect the writing and selection of our text books in this regard?

As individuals we can do little or nothing in this matter, but through our organizations, state associations and the League it should be possible to secure attention in these matters. For the League, with its supposedly nation-wide membership, it should be a fairly easy matter to have a survey made of the school books used in the public schools of the various states with regard to their attitude toward honey—a survey that should indicate the needs as well as the means of future attention to this problem.

After examining the book in ques-

tion, one can hardly doubt that some other industries have found it worth while to give their attention to this means of propaganda; and we are all aware of the influence which ideas obtained during the plastic age of childhood exercises over the future life of the child. If we could have the good qualities of honey explained to the children, especially in our large cities, that should certainly prove a worth while object. If we could once raise a generation possessing an intelligent knowledge of honey, I dare say our marketing problem would be solved. What would be the effect on our industry if children in our schools were taught the reason for granulation of honey? In our book I find the question? "Can you see why cotton seed oil is cheaper than olive oil?" Suppose we could change this to "Can you see why extracted honey is cheaper than comb honey?" Or the following: "Get a little olive oil, cotton seed oil, and peanut oil. Taste them and tell which you like best." What if this was made to read: "Get a little comb honey, extracted honey, and granulated honey," etc., would this be worth while?

One Dollar For a Bee Sting

We have just read where a suit was instituted in the Superior Court at Los Angeles, April 2, wherein one dollar is asked for each bee sting sustained by a boy. This is not a very high tax, but it is then related that the boy was stung two hundred and fifty times—please remit me \$250.

As we sit and muse over the stinging "bee," our thoughts go back to the speech made by a political orator who compared the noise made by his opponent to that made by frogs:

"Yes, fellow citizens, all of that reminds me of the man who was bothered by the frogs' cry. This man went into a restaurant, ordered frog legs and was charged 60 cents.

"Why, that's an outrage. I can supply you with a thousand for five dollars!"

"Well, I'll double that, and I'll pay you ten dollars for every thousand you bring in," said the proprietor.

The man came back the next day and laid six frogs on the counter.

"How's this? You promised to bring me a thousand."

"Yes, I really thought there must be forty thousand from the noise they made, but here is every one of 'em!"

And then the orator explained that is just how it will be when his opponent's votes are counted, and we are just wondering if, after the pain subsides, in about six of the bee stings, the other two hundred and forty-four will not vanish.

J. B. Dillon.

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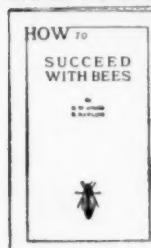
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1-lb. pkg. of bees and untested queen, \$3.00; 2 lbs., \$5.00. All mail charges paid
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(Mention Am. Bee Journal when writing)

Government Grading of Honey

IN addition to the extracted honey color grader now in use in the offices of the Inspection Service in New York City, the Bureau of Agricultural Economics will place color graders in its offices in San Francisco and Los Angeles. Grading of honey for San Diego will be taken care of from Los Angeles.

Anyone desiring to have samples of extracted honey graded for color according to the U. S. standards should send a sample to any of the addresses given below:

Room 2, Ferry Building, San Francisco, Calif.

Room 206, Wholesale Terminal Building, Los Angeles, Calif.

102 Warren Street, New York City.

Division of Grades and Standards, Bureau of Agricultural Economics, Department of Agriculture, Washington, D. C.

Division of Bee Culture, Bureau of Entomology, Department of Agriculture, Washington, D. C.

Many beekeepers already know that the Division of Bee Culture at Washington, and also the Inspection Service of the Bureau of Agricultural Economics at Washington, have these graders and are ready to grade any sample of honey on request. A small sample, about two ounces, is all that is required. This service is free.

These graders are for the use of beekeepers and dealers who, having no graders of their own, wish to know how a sample of honey grades according to the U. S. standards for honey which have been prepared by the Division of Bee Culture in cooperation with the Bureau of Agricultural Economics. These standard grades will be of use particularly to those whose honey goes long distances to market and to exporters of honey who have hitherto been compelled to sell entirely by sample.

With graders also located in London and Hamburg, importers in the principal countries to which we now export honey will soon be informed of the standardization of U. S. honey and that they can safely order honey by the use of the color grader and the U. S. standards for honey without being compelled to await the slow transmission of samples and extensive correspondence. It is believed that this will help to increase the demand for U. S. honey. For some time the Division of Bee Culture has been giving attention to the foreign trade in honey, getting into touch with the various branches of the government in Washington which are

connected with the protection and promotion of foreign trade, and good results are beginning to appear in the favorable consideration now being given to U. S. honeys.

In addition to the work done directly through government agencies, publicity has been secured in trade journals and through distribution of accurate statements in foreign countries in regard to honey from the U. S., which, in many parts, is supposed to be artificial honey because of its beautiful appearance and light color, or else is said to be produced in a filthy and unclean manner. Commercial America, a magazine which goes to nearly all the large importers in foreign countries, recently published a well illustrated article describing the production of honey in the U. S. and emphasizing the possibility of securing pure honey of the quality desired by ordering honey of U. S. standard grades.

This dissemination among foreign buyers, of accurate information in regard to the purity and wholesomeness of U. S. honeys, in connection with the use of standard grades and the distribution of the standard graders for extracted honey in the principal ports of this and foreign countries, now makes possible a cultivation of the foreign trade in honey such as has never before been possible.

Although our export of honey in 1925 was more than five million pounds, more than three million pounds came into the U. S. from our tropical islands, Hawaii and Porto Rico. This makes our net exports from the mainland much smaller and we need to use every means to increase this great potential foreign market for our honey. Uniform standard grading of honey throughout the U. S. and the facilities now available for inspection and for use of graders, as well as continued close attention to every angle of publicity by every American interested in the production or sale of honey, give promise of help in the marketing of honey.

Dominican Honey Exports to United States Increase

Declared exports of honey from San Pedro de Macoris, Dominican Republic, to the United States during 1926 amounted to 27,420 pounds, valued at \$1,778, as against 15,370 pounds valued at \$1,137 during 1925, according to Consular Agent J. W. Tatem, San Pedro de Macoris, Dominican Republic.

Capacity 40% Greater
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Apiary of 50 colonies, like
the above, produced 250
pounds of honey per colony
in 1925, at Hamilton, Ill.
Ten-frame hive average for
year, 150 pounds.

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B. F. Kindig, formerly State Apiary Inspector of Michigan, writes:

"The future of the honey business depends upon the profit that beekeepers will make. As beekeepers, you and I have a great deal to do with the cost of production in our yards. . . .

"An Iowa beekeeper writes me: 'After several years' experience with the Modified Dadant hive, I find that it has produced all of 100 per cent more honey with 50 per cent

less work than any other hive we have used. I have never lost a colony in the Modified Dadant, and they are so strong that every season is a good honey season.'

"A beekeeper from Missouri writes: 'I have bees in eight-frame, ten-frame and Dadant hives and consider the latter far the better. The Dadant hives yield from 50 to 100 pounds more honey per colony than the others. They are more economical to run and it is not necessary to go through them so often.'

(See American Bee Journal, March, 1925, Page 113)

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THE EDITOR'S ANSWERS

When stamp is enclosed, the editor will answer questions by mail. Since we have far more questions than we can print in the space available, several months sometimes elapse before answers appear.

BROOD IN SUPERS

We have an outapiary run for extracted honey, and last winter we left one or more supers, containing honey, on each brood chamber. Now every hive has established brood chambers in these extracting supers, leaving the brood combs below without any brood whatever. We presume, however, that the queen will lay in the brood combs below soon as the bees are strong enough.

Please advise us how to manage these hives so as to get the best results. How would it do to put the queen below, with a queen excluder between the supers and brood combs?

Would you use the extracting supers that were left on the hives last winter and have brood in them now (the combs are dark) for surplus this season, or would you set them aside for food chambers next winter?

VIRGINIA.

Answer.—The trouble you complain of is often met with when the beekeeper uses what has been lately called a "food chamber." That is why we always want to fill up the main brood chamber for winter and leave off the upper story. It is very easy to explain why the bees go to the upper story as soon as they can and stay there. It is because heat always ascends and the upper story is warmer than the lower. This explains why one of our European critics not long ago stated that it was well known that bees prefer to put their brood up and down rather than sideways. But if you have just one brood chamber and it is large enough for both brood and honey, there is no need of the "food chamber." You must be sure, in fall, to leave enough honey in the main hive body. Then in spring you will rarely have to put on another story before the crop comes.

The remedy is to do what you suggest. As to the darkness of the combs, if the bees have had time to burnish them, after the brood was hatched, there will be no danger of any color being given to the honey, at least not enough to make a perceptible difference in the color of the crop.

LARGE HIVES

I use a good many Modified Dadant hives. How do you put on your shallow supers when just one is most full? Do you raise it up and put empty one under? or on top? I have a time to get queen to lay below; always packs the supers with brood, and bees start cells also above and nothing below. I know you don't like excluders, but how do you keep the "big body" filled at all times? In supering for extracted honey, do you keep moving capped combs up and empty below, or just add on top as fast as needed? Would it work all right to super the same manner as for section honey to keep swarming down?

PENNSYLVANIA.

Answer.—It is probable that you put the supers on too early and that the queen goes up into them then. If you put the supers on when the crop begins, the bees will put honey in them at once and the queen will be likely to stay below. If you cannot secure that result, then you had better use a queen excluder.

One help to keep the queen out of the supers is to have the combs in them farther apart than in the brood chamber. When you have ten or nine combs in a 16-inch super, the combs are about 1 1/4 inches apart and the cells are built too deep for the queen to lay in them.

Put the second super under the first one, if it is very full. Often, however, we put the second super on top, when the first is only partly full. The sealed combs should, of course, be kept above, if possible. But we avoid handling combs as much as possible during the busy season.

CHILLED BROOD

1. I have two hives of bees. I transferred them from the old log gums into the standard ten-frame hive onto full sheets of foundation last April. Now one colony is pretty weak; they only have one frame of brood, and about a week ago they started brood in another frame. After they had started brood in the other comb, they left one side of the first comb, and the brood had not all emerged yet. The brood was alive then, but now those that did not emerge are dead. This brood is of normal color, but if I stick a match into them they are liquid inside. They have no odor, no ropiness, and they are all of normal color—what are not liquefied. Some cappings are sunken; and if I take some of the bad brood out of the cell the bees will lick at them. The other brood that the bees cover is perfectly healthy. Now, if this is foulbrood, it doesn't tally with the description given in the government bulletins on the subject.

2. The queen in this hive is starting to lay two eggs in a cell. Is this a sign that she is failing?

WEST VIRGINIA.

Answers.—1. It is not at all probable that there is foulbrood in that hive. The brood that was abandoned by the bees has probably been chilled to death. The reason why your colony has not progressed is very probably because it did not have enough bees to take care of the brood. You should have helped it a little.

2. The laying of two eggs in one cell shows that the queen is prolific enough to lay much more, but evidently the cluster of bees is too small, and as she does not wish to lay eggs in cells that are not cared for, she lays two or more eggs in a cell. At least that is my conclusion.

UNUSUAL DEATH OF BEES

All of my queens are dying without any apparent cause as far as I can see. There is plenty of brood in the hives when the queens die, but laying workers take their place immediately, putting from one to ten eggs in a cell. Some hives had young queens, but they went just the same. My neighbors are having the same trouble. Can you give me some reason for this?

My first impression was that it was on account of old queens, but as some hives had young queens that went just the same, I had to change my opinion. I am therefore referring the question to you for a possible reason for the trouble, and would thank you for any information you can give me.

TENNESSEE.

Answer.—There are many things about bees that puzzle us, and one of them is the diseases of the adult bees. If you have had such weather as we have been having, the trouble may be only spring dwindling, at which time the bees die, and sometimes the queen. In such cases the hive is very weak in bees.

But there are several diseases of the adult bees which are not fully understood. The Isle-of-Wight disease is said to be caused by the Tarsonemus woodi, which invades the tracheæ. Then they discovered the Nosema apis, which, although not very clearly the cause of disease, may be the

cause of queens dying. But we have not yet found all. O. O. Poppleton, in Florida, and Major Merriam, in California, years ago, both had spring dwindling and what was called "paralysis." I corresponded with both at the same time; each of them ascribed a cause to the bee sickness which did not exist in the case of the other. A similar trouble was found in Ancona, Italy, and in all the Marches of Italy. They had another explanation, sometimes the pollen, at other times the honey.

It is a little bit shameful not to be able to properly diagnose a trouble, but there are so many things that we don't know and so many things that we know that "ain't so," as Josh Billings said, that we ought to be willing to acknowledge that we don't know it all. Sorry that I cannot give you a better reply.

EARLY TRANSFERRING

When we bought this farm last fall we found on it three colonies of Italian bees in old and very rotten box hives. There is also a colony in the side of the dwelling, which has endured for at least five years. Already bees from each of these colonies are gathering pollen from willows.

Please advise whether there is a chance of a successful transfer of these bees to ten-frame hives supplied with foundation.

OHIO.

Answer.—There should be no difficulty in the transferring of those colonies to good hives. You might just drive them out, but it would be quite a loss to neglect the brood. It is better to transfer all the worker brood to movable frames. This should be done in fruit blossom time. We have done it many times and have printed a little booklet which gives "every step" in the process. Price 10 cents.

Those bees will give you good returns if you do the work right, at the proper time.

PARALYSIS IN PACKAGE BEES

1. I have one colony of bees out of twenty-five four-pound packages, which I got from Louisiana in April, that seemed perfectly all right when I got them, but a few weeks ago I noticed that there were lots of bees dying in the colony. Lots of the bees are sick, look old and greasy, and tremble, crawl around and finally die. I cleaned up all the dead bees in front of the hive, four days ago, and today there are about a thousand dead ones again. They had built up fairly strong, until lately they are dwindling down. Can it be paralysis? What can I do for them, if anything? Should I destroy them to keep this disease from spreading? Is there any medicine I can give them in feed which would help them? I thought I would try tincture of belladonna, but don't know how much to use. Would it kill the brood if much were used?

2. I requested them a few days ago, thinking that might help. Gave them their winter entrance, took out several foundation frames, put in a division board and filled the space with cloth so as to keep them good and warm.

3. I have one queen that has her back caved in. Did you ever hear of such a thing before? She does awful well. Should I requeen her?

IOWA.

Answers.—1. Yes, I believe the trouble is paralysis, or May disease, as some call it. The fault is not with the people who sold them to you. We have seen a trouble of this kind once in a while, and, although they have ascribed these troubles to Nosema apis and other bacteria, there does not seem to be anything positive as yet. This trouble has shown itself all over the world and no very positive remedy has yet been found. An Italian beekeeper said that he had cured it by feeding the bees on honey heated and mixed with some tonics, such as peppermint, lavender, ginger. I do not know just how good those preparations may be, but they can do no harm. There is usually very

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Select tested, for breeding, \$7.50

The very best queen, tested for breeding, \$15.00

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Fluid standards which are subject to change are unsatisfactory.

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It is possible to take a numerical reading of any color tint within range of instrument, and same can be filed for future reference instead of relying on an unstable standard sample.

Do away with standard color samples.

Officially adopted by the Office of Bee Culture Investigation and the Bureau of Agricultural Economics for the color grading of honeys.

Price \$40

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Atten-SHUN

RIGHT DRESS! — those two commands make soldiers out of men.

Reverse them, and you have the essentials necessary to sell your honey. Give your packages the right dress and they will command the attention of the purchaser.

Small package sales is the stimulant which the honey market needs, whether it be comb or extracted. Get a good label and stick to it.

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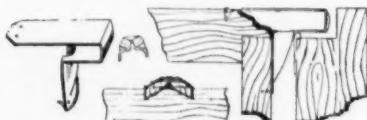
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With our Metal Frame Spacers and Clip Supports

New low price: Spacers, 25c per 100. Clip Supports, \$1.00 per 100.

Tri-Plex Manufacturing Co.
Preston, Iowa

little danger of the disease spreading, and the colonies that suffer from it often recover during the summer, in this country at least. Have never heard of the use of tincture of belladonna. As it is a very strong preparation, if used it should be tried very sparingly.

2. I think that what you did ought to help, especially if you feed them some good sugar syrup.

3. We have had queens with the first rings of the abdomen slightly depressed, accidentally. They were apparently just as good as others. If she is a good producer, keep her.

SMOKER FUEL

In the April issue I notice an article of Mr. A. M. Bridge about a real bee smoke—sumac bobs. I don't understand that name; could you explain it for me? Where does a person get it?

IOWA.

Answer—Mr. A. M. Bridge means "the seed clusters of the sumac." They are undoubtedly good, but many other things are good also. When I worked with the bees every day, all I cared for was a good supply of hot coals at the bottom of the smoker stove, then any kind of dry wood, cut so as to stick out a little beyond the end of the barrel. After the fire is well started, if you keep using the smoker and stand it up on end when not using it, you can get a fire that will last all day, just by replenishing the stove of the smoker, occasionally shaking out the ashes. I rarely had to light my smoker more than once a day.

QUEENLESS COLONIES

Am having trouble with queenless colonies in Florida same as I did in Massachusetts; must be faulty management. I summer my few colonies in small outapiaries, both there and here, where it is not easy to know if swarming occurs. (Mostly in M. D. hives.) Have tried to control swarming by large hive and every two or three weeks looking for and cutting queen cells.

When I find a colony with queenless, I look for eggs or tiny larvae; if found, I cut all queen-cells, usually handling the frames so slowly and carefully, with the Italians and slight smoke, it is hardly necessary to use veil. In more than half of these I have gone back in a week or two and found colony queenless and without queen-cells, and in part of them the queen was only a few months old.

FLORIDA.

Answer—I will have to give you Dr. Miller's answer: I don't know. It is just guesswork. But my guess would be that the bees swarmed, shortly after you removed queen-cells. Bees swarm readily, even with cells just formed, whenever they get the swarming fever.

The only suggestions I can give you are to have your hives well shaded, an immense amount of ventilation, besides the room you appear to give them; do away with drone-comb as much as possible and keep conditions as normal as possible.

Why your hives should be queenless, without any queen cells, is a problem that I cannot solve, and could perhaps not solve even if I were on the spot with you.

I do not think manipulations are to blame for the trouble.

DISEASE IN DRY COMBS

I have some extracting supers from a colony that had foulbrood. These combs are perfectly dry and contain no cells of honey that were missed at extracting time. Would you consider them safe to use?

IOWA.

Answer—No, I do not consider those combs as safe, if they were on a hive containing foulbrood. They would need to be treated by the Hutzelman method or a similar one. We recommend the Hutzelman method because it has been tested thoroughly.

DRONE-BROOD — SWARMS

1. In order to reduce my number of colonies, I took good, strong ones and united with other good, strong colonies. The bees went together peacefully, but the top colonies went to work raising queens and turned a great deal of their brood into drones. Will they continue to use that drone-comb to raise drones another year? Would it be best to cut it out?

2. I had Italian bees and had reduced swarming to a minimum, but three years ago I requeened with Gray Caucasians and since then have been worried to death with swarms; some colonies swarm five and six times, and last year one sent out eleven swarms. Is it the Caucasian bees?

3. In returning swarms to the mother hive, is it best to kill the queen or not?

MISSOURI.

Answers.—1. Yes, if you wish to avoid drone-rearing you should remove the drone-comb and replace it with worker foundation. If you simply cut it out, the bees will probably rebuild drone-comb in the same spot. You should keep drone-comb only in the colonies which you intend to use as breeders. Most colonies will manage to build some drone-comb anyway in corners where there are a few drone-cells.

2. The Caucasians and the Carniolans are great swarmers, but your trouble may have been caused by different circumstances besides the breed.

3. If the queen is old, it is best to kill her, but in that case you must make sure that they do not have more than one queen-cell, as they would be sure to swarm with the first queen hatched. I would prefer to harvest the swarm in a separate hive and return it to the colony later.

FEEDING HONEY

I have about 300 pounds of unripe and tainted honey, extracted from brood chambers after treatment for American foulbrood last summer. Could it be made safe for spring feeding? I find it hard to boil honey without scorching. Would double boiler (bain-marie) be sufficient heating to destroy germs? Or is it safer to dump it all in the sewer?

CANADA.

Answer—It will be really safer to boil that honey, or rather to heat it to the temperature of hot water, for a half hour, than to pour it in the sewer where some bees might have access to it.

Dr. G. F. White, of Washington, D. C., the bacteriologist who discovered the *Bacillus* of foulbrood, is authority for the statement that honey boiled at the temperature of hot water (212°) for a half hour is no longer dangerous, as this temperature effectively destroys the germs. But you had best heat the honey over a "bain-marie" and make sure, with a thermometer, that your bath reaches that degree of heat.

STRENGTHENING WEAKLINGS

Will you please be good enough to outline the best method of introducing "package bees" to a weakened hive in the spring? I understand that "package bees" are frequently used to build up colonies that do not come out strong enough to maintain themselves, and I would like to get some ideas for such introduction.

CANADA.

Answer—In order to unite bees so that they will not fight, it is necessary to feed them heavily and to keep away robbers. If you will feed both the colony and the package bees, previous to uniting them, then place the box containing the package bees on top of or under the hive, with plenty of room for them to join together, at night or when the weather is cool enough to keep them from flying, you will have no trouble, provided either the one or the other is queenless and is fully aware of its queenlessness.

Meetings and Events

Missouri Passes New Bee-keeping Law

The Governor of Missouri has just signed a new beekeeping law, which takes the place of the old one which has been in effect in Missouri for several years. Under this new law the new state bee inspector will be appointed by the State Board of Agriculture, after having been recommended by the State Beekeepers' Association.

Box-hives are prohibited in the law and may be destroyed if not transferred within a reasonable length of time.

In order to import bees into Missouri, the bees must be accompanied by certificate issued by duly authorized inspectors of other states. The same is true of moving bees from one point in Missouri to another. They must be accompanied by certificate issued by the State Bee Inspector.

A new feature of the law is the registration of all bees, which must be done this year, before April 1, with the State Apiarist, and a tax of 15 cents per colony be paid, which will go into a fund to be used in paying expenses of the State Apiarist.

The law thus becomes very much more strict than in the past and provides for a fund which will help to support it.

We understand that the State Legislature has provided for a special emergency fund of \$2,000.00 which may be used by the State Inspector until the license fees become available.

Pan-American Conference Studies Honey Standards

On May 10 the delegates to the Pan-American Standardization Conference, which holds its sessions at the Pan-American Union building at Washington, D. C., studied the exhibit of standardization work in the United States made by the Bureau of Agricultural Economics. Among other exhibits was that of honey, which was made in cooperation with the Division of Bee Culture Investigations under James I. Hambleton, apiculturist. The operation of the United States standards for comb and extracted honey was illustrated by the use of the standard color grader for extracted honey, by samples of extracted honey of the various color grades, and by the color prints showing the different grades of comb honey.

Circulars were also distributed giving facts regarding the standard grades of honey, and stating that the standard color graders are now located at the principal ports in this

country as well as in the ports of England and Germany, thus making it convenient for buyers and exporters to use the United States standard grades.

In order to receive the highest prices, it is desirable that producers of honey throughout the United States should use the United States standards in grading all their honey. Information concerning grading may be obtained from the Division of Bee Culture Investigations, Department of Agriculture, Washington, D. C.

Omaha-Council Bluffs Meeting July 12-13

Beekeepers of the west central states are slated for an unusual meeting this summer when they get together at Omaha on July 12 and at Council Bluffs, across the river, on the following day. The following is a general outline of the schedule:

Omaha, Tuesday, July 12.

10:12—Program at Hotel Rome.

12:30—Lunch.

1:30—Tour of apiaries on west side of Missouri River.

6:30—Banquet and program at Hotel Rome.

Council Bluffs, Wednesday, July 13.

10:12—Program at the Chieftain Hotel.

12:30—Lunch.

1:30—Visit to Root Company factory and tour of apiaries on east side of the river.

Additional programs will be in readiness for use in case of rainy afternoons.

A partial list of speakers follows:

H. H. Root, Medina, Ohio; F. C. Pellett, Hamilton, Illinois; Francis Jager and J. W. Thompson, St. Paul, Minn.; Grover Lothrop, Aberdeen, S. D.; O. G. Borton, Scotland, S. D.; H. C. Cook, Omaha, Neb., and O. W. Park, Ames, Iowa.

You have a cordial invitation to attend this meeting, where old acquaintances will be renewed and new ones made.

Prominent Beekeeper Dies

A telegram advises us of the death of Louis Alfonsus on the night of May 12, following an operation at a Milwaukee hospital. The funeral was held from St. Joseph church, Milwaukee, May 14. One son, Irving, was with his father at the time of his passing. Other members of the family are still in Europe.

Louis Alfonsus was formerly in charge of the government work in beekeeping at Vienna, Austria, and was one of the best known beekeepers of central Europe. He came to America following the war. He

Old Reliable

Three Banded Italian Queens

Bred by experienced queen breeders, by the best approved methods

Our aim and reputation is quality queens, which we will not sacrifice for quantity.

Our bees have produced large honey crops for others; they will satisfy you.

Pure mating, safe arrival and satisfaction guaranteed.

Health certificate with each shipment.

Select untested queens \$1.00, six for \$5.50, dozen \$10.00, one hundred \$75.00.

P. M. WILLIAMS

MOUNT WILLING, ALABAMA

\$100.00

In Cash Prizes to be Given Away

We being breeders of Caucasian bees and queens and knowing they are great honey gatherers, put on the following contest: Between March 15 and October 15, 1927, we agree to pay to the person producing the largest number of pound sections of marketable comb honey, to weigh not less than 12 ounces net, from one colony of Caucasian bees, spring count, regardless of his location or where he got his stock of bees:

To the one producing the largest number	\$60.00
To the one producing the second largest	25.00
To the one producing the third largest	15.00
The same to be paid in cash on or before November 1, 1927	

All contestants must file their entries with us on or before July 1, 1927.

BOLLING BEE CO.
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QUEENS

of highest quality Italian stock from stats certified, disease free yards, guaranteed to give one full year's satisfactory service. One dollar each.

HOLLOWAY'S APIARIES
MARIETTA, OKLA.

Moore's Strain

Away back in 1879 I commenced rearing Italian queens with the object of improvement constantly in view.

By careful selection during all these years I have succeeded in producing a strain of three-banded, leather-colored Italian bees, known as **MOORE'S STRAIN OF ITALIANS**, which has won a world-wide reputation for honey-gathering, hardiness, gentleness, etc.

Mr. A. K. Whidden, San Jacinto, Cal., says: "In 1913, 80 per cent of the bees in this district died of European foulbrood. I had an apiary of 60 colonies headed by daughters of your queens in which I did not lose a colony, and in 1914 they made 360 pounds per colony."

"In 1917 I bought 12 queens of you and introduced them to diseased colonies. Four of them became too weak to recover, and they all got rapidly worse until it looked impossible for any of them to recover. In eight of them, as soon as the young bees from your queens began to hatch, the disease began to disappear. They cleaned up and stayed clean."

I am now booking orders for June delivery or later.

Untested queens, \$1.00; 6, \$5.00; 12, \$9.00. Select untested, \$1.25; 6, \$6.00; 12, \$11.00. Safe arrival and satisfaction guaranteed. Circular free.

J. P. MOORE, Morgan, Kentucky

Scott Quality Queens

THREE-BAND ITALIANS

Prices as follows for June delivery on select-untested, the prolific kind:

One sel-unt. queen	\$ 1.00
Six sel-unt. queens	5.40
Twelve sel-unt. queens	9.60
One hundred sel-unt. queens	75.00

We guarantee pure stock, no disease and perfect satisfaction.

Seventeen years' experience

THE CROWVILLE APIARIES

J. J. Scott, Prop., Crowville, Louisiana

GRAY CAUCASIANS

Unequaled for gentleness and honey production

Queens balance of season, \$1.00 each; 6, \$5.50; \$10.50 dozen
Circular free

W. A. HOLMBERG, Turlock, Calif.

COFFEY'S QUEENS

The leading June Brides of the season

We have been carefully selecting and breeding our Imperial strain of Italians for the following characteristics: Prolificness, honey gathering ability, uniformity and longevity. You may pay more, but you cannot buy better queens than Coffey's.

Prices as follows for remainder of season: One to nine, 90c each; ten to twenty-four, 70c each; twenty-five or more, 65c each.

Circular and prices on package bees free.

The Coffey Apiaries

Where they return your money if you are not satisfied

BOX 8, WHITSETT, TEXAS

had looked forward to making his permanent home here and to establishing his family in this country. The sympathy of many friends in both America and Europe will go out to the bereaved family.

of Switzerland, was made president of the club for 1928. Baldensperger sent us two postal cards with the signatures of some twenty-five beekeepers.

These international meetings are a wonderful thing. They will help spread progressive ideas all through the world.

Damage from Spray Poison

Hyde Brothers, of New Canton, Illinois, report serious loss to nearly 180 colonies of bees in their apiaries near New Canton from the spraying of nearby orchards while in bloom. The bees had wintered well and were in good condition for the season, with good prospects for a crop from white clover. The spraying of an orchard near the apiary so poisoned the bees that all hope of a crop this season is gone. With the loss of the brood and many of the adult bees, the colonies are so reduced that the best that can be hoped is to build them up again by the end of the season.

The owners of the apiary had asked to be notified in case that spray was to be applied, so that they could remove their bees from the neighborhood, but the first they knew of it was when the bees began dying in wholesale numbers.

Such reports continue to come in from fruit districts in many widely separated localities. So serious has the matter become that beekeepers have been compelled to abandon many orchard districts entirely for commercial honey production.

In view of the valuable service which the bees render in the pollination of the fruit blossoms, it is unfortunate that a better understanding cannot be arrived at between the bee men and the fruit growers.

New Bee Magazines

The second number of "American Honey Producer," the official organ of the Honey Producers' League, has appeared. Secretary Corkins is the editor, and the "Producer" is a promising little magazine. All members of the League get it along with their membership in the association. Others pay one dollar per year.

"The Canadian Beekeeper and Gardener," published at Winnipeg, is the latest addition to the long list of beekeeping publications. It deals with the problems of the Canadian beekeeper and includes a section devoted to gardening also. The first number is a very creditable appearing effort. Since beekeeping is expanding so rapidly in western Canada, the new magazine should receive encouragement at this time.

Wedding Bells

Cards are out announcing the marriage of Miss Ruth Robinson, daughter of C. H. Robinson, of Tacoma, Washington, to Benjamin H. Fischer, of Roanoke, Illinois. The Robinsons are well known to Illinois beekeepers, having formerly lived at Normal, while Mr. Fischer is a prominent beekeeper of that state.

The Apis Club on the Continent

An international meeting of the Apis Club was held in Paris on April 20. We learn from our old friend Baldensperger that Dr. Morgenthaler,

A New Bee Book

"Modern Beekeeping" by Herbert Mace, is the title of a book, by an English author, which has recently come from the press. It is well bound, well illustrated, and printed on enameled paper. A feature of special interest is an autographed photo of the author which is mounted on a special insert. It adds much to know something of the author of a book in which one is interested.

While the author recognizes that some improvements in beekeeping methods have come from America, he defends the English system for England, and contends that "misguided enthusiasm" has led some British apiarists to adopt American methods. He points out the difference between American and British climatic conditions, especially as concerns wintering. The English winter is mild and "a good colony in a sound, well stored hive takes no harm whatever between November and March." The author also prefers the native bees to the Italians.

Those who are interested in learning more concerning the methods of honey production commonly practiced in Great Britain will find this book of interest. In addition to the text matter concerning beekeeping practice, several pages of supplement are devoted to information concerning associations, publications, shows, appliances, etc.

The price of the book postpaid is \$1.35, and it can be obtained from the publisher, Modern Beekeeping, Harlow, Essex, England.

Winter Protection

H. F. Wilson and V. G. Milum

Bulletin 75 of the Agricultural Experiment Station of the University of Wisconsin is on our desk. It is a pamphlet of 48 pages, showing a great deal of research and requiring much attention to be fully understood. Messrs. Wilson and Milum have certainly gone into the matter of winter protection for bees in a thorough manner.

The bulletin contains seventeen figures and graphs. It shows their method of manufacturing a thermocouple for ascertaining the temperatures of the hive inside of the cluster.

We cannot go into details. Let it suffice to say that the bulletin is worth reading. On the whole, it confirms the opinions expressed by practical men as to the value of winter protection and places it as of less importance than "the condition of the colonies and their winter stores" at the opening of winter.

Much valuable information will be secured by a careful perusal of this work.



Hundreds of beekeepers, large and small, testify that Forehand's Three-band Bees and Queens combine a greater degree of beauty, honey getting and gentleness. Would you like descriptive circular?

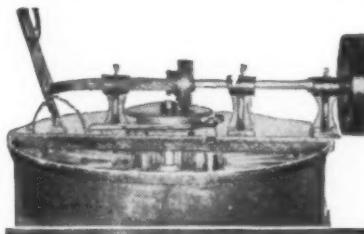
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	1-12	12-25	25-99
Untested Queens	\$1.00	\$.85	\$.80
Sel. Untested Queens	1.25	1.00	.90
Tested Queens	2.00	1.75	
Sel. Tested Queens	2.50	2.25	

One pound bees and queen, \$2.75; ten or more, \$2.50. Two pounds bees and queen, \$3.75; ten or more, \$3.50. Three pounds bees and queen, \$4.75; ten or more, \$4.50.

N. FOREHAND

Gonzales, Florida



Beekeepers of the United States
have been quick to see the
advantages of the

**HODGSON RADIAL HONEY
EXTRACTOR**

(Patented in United States and Canada 1924)

These machines have now been on the market one year and are giving excellent satisfaction in many parts of the United States and Canada

More beekeepers buy extractors in the summer months than in the spring, but already this year's sales exceed our total sales of last year

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S. P. Hodgson & Sons, British Columbia, New Westminster, Canada

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Peterman's Select Italian Queens

FROM SUNNY CALIFORNIA

1, \$1.00; 6, \$5.50; 12, \$10.00; 25, \$20.00; 100, \$75.00

Delivery starting April 1, 1927

Safe Delivery and Entire Satisfaction Guaranteed

H. PETERMAN

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Sunnyland Bees and Queens FOR JUNE DELIVERY

Light Three-band Italian. Gentle and very Profitable

Combless Package—Young bees, no drones, full weight, syrup feeder in cage and with a select untested queen, \$3.50 each. Ten or more, \$3.40 each.

Nucleus—Bees on comb ship well, are easily transferred to hive, and build up to full colonies quickly. Two-frame with queen, \$3.50; ten or more, \$3.40. Three-frame \$1.00 more.

Queens—We have them that will please. The queen is the heart of the colony. The best cost no more. One, \$1.00; six, \$5.00; dozen, \$9.00; hundred, \$65.00.

Everything disease free and guaranteed. State inspected. Money back if not satisfied.

GRENSHAW COUNTY APIARIES
RUTLEDGE, ALA.

BOOKING ORDERS

for high-grade three-banded Italian bees and queens: 2-lb. package with select untested queen, \$4.50; discount on quantity. Select untested, \$1.00, \$10.00 per dozen; select tested queen, \$1.50. Inspector's certificate with each.

J. ALLEN, Catherine, Alabama

QUEENS—1927

Nineteen years in business. Will give you perfect satisfaction. Golden or three-band stock, bred separate, and ready to ship early in April. One untested, \$1.00; twelve for \$9.00; in lots of 100 or more, 75c each.

R. O. COX, RUTLEDGE, ALA.

Save Time -- Save Worry

Dadant's Wired Foundation

Can be nailed into Lewis Slotted Bottom Bar in a jiffy. And such wonderful combs!

Sold by all Dealers in Lewis
Beware and Dadant's Foundation

Golden Queens and Banded Bees

Untested queens	\$1.00 each
Tested queens	\$1.50 each
Bees	\$1.50 per lb.
Nucleus	\$1.50 per frame

Bees inspected; free from disease

J. W. SHERMAN, VALDOSTA, GA.

ATTRACTIVE PRICES

Section Holders, \$3.50 per 100
Scalloped Separators, \$1.80 per 100

Send for circular and prices

VOSS MFG. CO.

Exira Box 60 Iowa

Labor Distribution in Beehive —Intelligence or Instinct

By Allen Latham

On page 191, R. Couallier honors an article of mine which appeared in February, 1926. That readers, who may not have read the discussion which ran for some months relative to the reasoning powers of bees, may understand, I will offer a word of explanation. In this discussion I took the ground that bees cannot reason, that they have no organ to reason with, that all their acts and actions can be explained through the exercise of the remarkable instinct possessed by the honeybee. Some of my opponents, through their very love of bees, wishing to believe that our pets can reason, granted the bee this power and sought through illustration to prove it. Far from wishing that bees could reason, I am most devoutly thankful that bees have no reasoning faculty. All our hold over them would be lost. In my article I mentioned what in my experience had seemed to come nearest to an act of reason on the part of bees. Allow me to picture more clearly the conditions.

The events happened some twenty years ago. I owned one colony of golden bees. This colony was set close to the house. I had thirty to forty other colonies, none golden, which were close together about 100 feet back of the house. On top of many of those colonies were set baby nuclei for mating some queens. My article of February, 1926, and Editor Couallier's article on page 191 will make all else clear except a little further light. The second day of the robbing I moved the golden colony about twenty feet to call a halt in the robbing while I was absent at school. This moving stopped the robbing for a few hours, but it began again as soon as the bees became well acquainted with their new location. The colony was moved two or three times, and after the third moving the bees very quickly relocated their hive.

The last information is offered advisedly, for I am well aware that it may be picked up as evidence that the yellow guard bees were, as Couallier would have us believe, young bees which had lost their home. Unfortunately for such a supposition, the hive was moved directly towards the apiary and all lost bees must pass their hive in its new location and fly seventy-five or more feet to find a lodging place at the entrances of the nuclei. A careful analysis of this combination of conditions would logically bar out at once Mr. Couallier's explanation of the guard bees. I know how bees will drift and how representatives of a colony of bees

may be found in nearly every colony in a yard. Such drifting does not happen every day, and is rare enough to make Mr. Couallier's suggestion still weaker.

It will be noted that Mr. Couallier's explanation is based upon the researches of Rosch. Does he not use the results found by Rosch either unwisely or else give these results unwarranted meaning? Would Mr. Couallier have us believe that the labor shifts in the hive are abrupt? If he would he is surely in error. I have not read much of Rosch's findings in their original form, but I doubt if he would have us believe that bees change at once from guards to fielders. I state unhesitatingly that if Rosch so teaches he is in error. My eyes and powers of discrimination are still good enough for me to trust them over the findings of the rest of mankind. When I find that my own eyes deceive me, and my mind loses the power of logic, then only will I accept without question the scientific findings of other people when they differ from my own findings.

The solution I offered for the remarkable robbing powers of those goldens was only a tentative one. I merely suggested it. If anyone offers a better I shall accept it. I will state here, however, that Mr. Couallier is wrong when he says that the "robbers are only field bees." I can cite instance after instance that disproves this. The truth is, the labor periods of bees overlap. Nurse bees do leave the hive. Field bees do guard the entrance. Guards do rob. True enough, most robbers are field bees, most guards are not field bees, most nurse bees stay at home.

That I might have evidence very fresh in mind as I wrote these lines, I took seat today (April 22) near a hive into which occasional freebooters were entering laden with stolen sweets. All these were old bees, all shiny from the wearing off of their hairs through having passed through the "third degree." I sat and killed each as it came in, for this colony was pestering some weak ones. Inside of five minutes the entrance was over-run with guards resenting my actions. Very few of these guards were under several months of age, only a few being young bees. Most of them, however, showed no signs that they were field bees, but about one in ten was a shiny old robber. Several of these old guards flew at me in hot anger. If they had never been field bees, why was their hair all gone and their abdomens glossy?

The phenomenon of bees guarding the entrance of other hives than their own is by no means unusual. I have seen it scores of times. When

scouts go out to find a home for the swarm they will guard the entrance of a prospective home against other scouts. When a colony finds a hive stocked with honey, and its inhabitants either dead or offering no resistance, the finders not only quickly start in to raid that hive, but they will defend it against bees other than their sisters. This I have seen many times.

Lay a piece of comb down convenient to bees from several colonies. Many bees will attack other bees on the comb rather than fill up quickly with a load. Would they do this if their instinct was wholly that of a fielder?

I have myself known of bees eleven months of age successfully guarding a hive with about forty pounds of stores, and with an entrance one inch by seventeen inches, in spite of the fact that their numbers were at that time not over six hundred. These bees were surely old enough to be field bees.

There is doubtless a time in the life of a bee when she is at her best as a nurse, say from seven to ten days of age; a time when she is at her best as a guard, say from two to three weeks of age; a time when she is at her best as a fielder, say from four to six weeks. The transition is not abrupt, but lingering. There is much overlapping. It takes but little inducement to turn a guard into a nurse bee, and vice versa. Slight need will make a field bee turn to guard, and a heavy flow of honey will cause guards and even nurse bees to enter the field at a period abnormal to the usual routine.

It would give me great pleasure to have someone offer a real good explanation of the behavior of those golden bees. My own explanation may be more ingenious than likely, and I am cock-sure that Mr. Couallier's explanation has nothing in it. What, then, is the true explanation? Connecticut.

A New Bee Book

J. J. Wilder, editor of the "Dixie Beekeeper," has recently published a little book of 96 pages, entitled "Wilder's System of Beekeeping." Wilder outlines the methods of honey production which he follows and details the conditions common to Georgia and Florida, where his extensive apiaries are located. The author credits much of his success to the late T. W. Livingstone, long a leader among bee men of the southern states.

The book has stiff paper covers and sells at 50 cents per copy. It can be secured direct from the author at Waycross, Georgia, or from the American Bee Journal.

Yancey Hustlers in Packages

(Three-band Italians, only)

Special low prices for month of June

2-lb. package, \$3.50; 10 or more packages, \$3.00 each
3-lb. package, 4.50; 10 or more packages, 4.00 each

Good weight, young worker bees, no drones, and a select young laying queen in each package

Queens: Yellow beauties, untested, \$1.00 each; \$9.00 per dozen; \$65 per hundred.
Tested, \$1.50 each

Satisfaction guaranteed on everything

Caney Valley Apiaries

Bay City, Texas



"First Lessons in Beekeeping"—succeed the first season

167 pages illustrated \$1.00 postpaid
AMERICAN BEE JOURNAL, Hamilton, Illinois

Hi-Grade Three Banded Italian Queens

From Alabama's Finest Honey Producing Strain

60c each

ANY NUMBER

Safe Arrival and Satisfaction Guaranteed

JNO. C. HOGG

Ramer, Alabama

IOWA QUEENS

Light Three-banded Italians

Untested	One, \$1.15; ten or more, \$1.00
Select Untested	One, 1.40; ten or more, 1.30
Tested	One, 1.75; ten or more, 1.60

Write for prices on breeding queens

Queens shipped in long distance cages. Pure mating and safe arrival guaranteed

ORIN STANLEY VALLEY APIARIES, LAMONI, IA.

Glass and Tin Honey Containers

2½-lb. cans in cartons of 100	\$4.00 car.
5-lb. pails in cartons of 50	3.50 "
10-lb. pails in cartons of 50	5.00 "
60-lb. tins, NEW, 2 tins per case	1.00 case
60-lb. tins, USED, 2 tins per case	.35 "
160-lb. kegs (the ideal container for both Buckwheat and Clover Honey)	1.20 each

GLASS JARS WITH GOLD LACQUERED CAPS

16-oz. Honey Capacity, 2 doz. per carton	\$1.20 car.
3-lb. or Quart Capacity, 1 doz. per carton	.90 "

SPECIAL HAZEL-ATLAS TALL JARS

8-oz. Honey Capacity, 2 doz. per carton	\$1.05 car.
16-oz. Honey Capacity, 2 doz. per carton	1.35 "
2-lb. Honey Capacity, 1 doz. per carton	.95 "

BEE SUPPLIES

AT SPECIAL PRICES. SEND FOR OUR PRICE LIST

HOFFMAN & HAUCK, Inc.

HONEY

ALL GRADES—ANY QUANTITY

Ozone Park, New York

For Results Buy Thrifty Bees

We are in position to make 24-hour delivery on your June orders for package bees and queens. Our good service and THRIFTY three-banded Italian bees are sure to please.

Notice our attractive prices on queens. We have the equipment to supply your needs large or small, and our 35 years' experience insures you of the finest bees and careful attention to every detail.

We guarantee pure mating of all queens and safe delivery and satisfaction on all bees and queens.

Untested queens—1 to 11, 80c each; 12 up, 70c each; 100, 60c each.

Package bees with untested queens for delivery by express F. O. B. shipping point.

Two-pound packages—1 to 5, \$3.70; 6 to 25, \$3.45; 26 up, \$3.25.

Three-pound packages—1 to 5, \$4.70; 6 to 25, \$4.45; 26 up, \$4.20.

Ask for further information.

W. J. FOREHAND & SONS
Ft. Deposit, Alabama

Remember THRIFTY bees are guaranteed to please

ALABAMA Queens and Package Bees

Package Bees Shipped Until June 15

Price list for 1927

I pay all transportation charges

1-lb. package with sel. unt. queen	\$3.00 each
1½-lb. package with sel. unt. queen	3.75 each
2-lb. package with sel. unt. queen	4.50 each
2½-lb. package with sel. unt. queen	5.00 each
3-lb. package with sel. unt. queen	5.50 each

25 cents less per package on orders for ten or more packages

40 cents less per package on orders for twenty or more packages

Select untested queens 75 cents each; ten for \$7.00; twenty or more, 65 cents each.

Select tested queens \$1.25 each

Prompt shipment, safe arrival, pure mating and entire satisfaction guaranteed on everything I ship. Claims adjusted by return mail. I have no disease, and a 1927 health certificate is attached to each shipment.

HAYNEVILLE APIARY CO., Hayneville, Ala.

W. E. HARRELL, Prop.

Crop and Market Report

Compiled by M. G. Dadant

For our June report, we asked our correspondents to answer the following questions:

1. Condition of bees.
2. Condition of honey plants.
3. Crop, if any, so far.
4. Amount of honey left on hand.

CONDITION OF BEES

In the northeastern section, including the New England States and New York, bees are somewhat in backward condition owing to the lateness of the spring season. However, they are coming out in the past few weeks in excellent shape and are nearly up to normal strength.

In the southeastern states the bees were held back somewhat by the late frost, but are possibly in a little less than normal condition. In the south central states and in Texas they are about up to normal.

In the central, western, and Mississippi Valley states, condition of bees is at least normal and in some instances much above normal. The average condition for the entire lot of states is probably 110 per cent of last year.

In North Dakota conditions are somewhat below normal, owing to the lateness of the season, but in the plain states of South Dakota, Nebraska and Kansas conditions are at least 100 per cent of last year.

In New Mexico bees are in normal condition, and in Arizona much above normal.

In the plain sections in the intermountain regions condition of bees is practically normal, although held back considerably by the snow and cold weather of a few weeks ago. They are rapidly developing, however, now and are nearly up to normal strength. The same condition exists in Oregon and Washington as in the intermountain states.

In California the bees' strength is probably about 110 per cent of normal conditions, and in the Canadian provinces practically 100 per cent.

CONDITION OF HONEY PLANTS

As stated previously in this page, the sections having white clover plants are in most instances above normal. We find normal conditions at least in the New England states and probably 10 per cent above normal in New York. In the central, western, and Mississippi Valley states, the average conditions will probably be 115 to 120 per cent of normal, so that there is apparently a good crop in prospect.

In the southeastern states the honey plants are somewhat below normal generally, a condition of about 80 per cent being the rule, with considerable variation. This also applies to Texas, some sections of which have had too much dry weather, although others have had plentiful rains.

Without a doubt, it is the central, western and eastern sections where white clover is most promising and where the present conditions are far above average for a normal flow.

Conditions in New Mexico have been a little too dry and plants are about 90 per cent of normal. In Arizona they are above normal.

California has had excellent prospects from honey plants, but the weather has been very much against them and so far San Diego county is the only county reporting any surplus to amount to anything, where probably forty pounds per colony have been stored by May 5 to 10. Other sections are having to feed, owing to the damp, cool weather, as there is much starvation because of the strong condition of the bees.

The northwest states report very late conditions.

CROP SO FAR

In the north half of the country, of course, there has not been any crop harvested, but sufficient dandelion and fruit bloom to help brood rearing. In most sections the blooming period was fairly good, so as to help strengthen the colonies.

In the southeast the early honey crop has been only probably 85 or 90 per cent of normal, and Florida has had possibly not over 50 per cent.

Texas reports about 40 per cent to 50 per cent of normal in her early flows, with possibilities for making

this up, but not likely. Louisiana flows have been, up to the time of floods, about 50 per cent of normal. Of course, nearly half of the state is now affected by the floods, which will change conditions down there.

New Mexico has about a normal crop, and Arizona probably 125 per cent of normal.

In California probably about normal conditions exist, possibly a little less. San Diego county has an excellent crop so far, but this is made up in part by the shortness of crop in other sections, due to the very unfavorable weather.

HONEY ON HAND

In practically all of the southeast and in fact all sections east of the Mississippi River, with the exception of Michigan and Wisconsin, practically all the honey has been cleaned up, there not being over 5 per cent left on hand, which is really not sufficient to keep the demand supplied. Some exceptions are: Kentucky, claiming 15 per cent of the honey on hand, Michigan 15 to 20 per cent, Wisconsin 10 to 15 per cent, and Pennsylvania about 20 per cent.

Other states with quite a considerable quantity of honey on hand are Texas, with nearly 25 per cent of last year's crop, and Minnesota, with 10 to 15 per cent.

The intermountain areas probably have the largest amount left on hand, the percentage varying from 10 per cent to 20 per cent in different states. California is practically cleaned up of honey, and has been for some time.

In connection with the honey left on hand, there has been quite a considerable improvement in the situation since this page was written last month. This is not due especially to any stimulation of the domestic demand, but is largely due to the fact that large quantities of honey are now being exported. We call the reader's attention to the fact that during the months of February and March, in 1927, there were nearly one million, nine hundred thousand pounds of honey exported, as compared to only about three hundred and forty-three thousand pounds for the same period last year.

Undoubtedly a part of this is due to the fact that honey has been a little lower in price and better able to compete in the foreign markets.

However, one of the chief reasons has been the activity on the part of the Department of Commerce at Washington, so ably assisted by the Bee Culture Department under the leadership of James I. Hambleton. These departments have made special effort to seek out foreign markets, and undoubtedly such efforts are having their rewards in the additional amounts exported.

We call this to the attention of our readers from the fact that undoubtedly there is too little attention paid to the work of our Washington departments, too little commendation of their work on the part of beekeepers, and too little call made upon them on the part of the beekeepers themselves.

One important official in Washington stated that undoubtedly the beekeepers could get a much larger amount of cooperation on the part of the departments there if there were only sufficient demand brought to bear by the beekeepers themselves. It is easy to understand that if no demand is brought by the rank and file of beekeepers for encouragement of honey markets or cooperation along lines of investigation of uses of honey, etc., there can be no efforts made when there are so many other lines which are making a heavy demand upon our Washington Agricultural Department and its branches.

We need to have investigation work done along the line of uses of honey, its desirability for feeding of children, its uses in ice cream making, carbonated drinks, and in fact all sweetenings. In the past there has been many articles written with reference to the desirability of honey along these lines and its medicinal value also, but no really creative work on which could be based a general campaign pushing for honey uses and honey sales.

This fault lies entirely with the beekeepers themselves in not having demanded such work, which undoubtedly will be done when the demand arises sufficiently strong to make it imperative.

CLASSIFIED DEPARTMENT

Advertisements in this department will be inserted for 5 cents per word, with no discounts. No classified advertisements accepted for less than 25 cents. Count each initial or number as one word.

Copy for this department must reach us not later than the 15th of each month preceding date of issue. If intended for classified department it should be so stated when advertisement is sent.

As a measure of protection to our readers, we require references of all new advertisers. To save time, please send the name of your bank and other references with your copy.

Advertisements of used beekeeping equipment or of bees on comb must be accompanied by a guarantee that the material is free from disease or be accompanied either by a certificate of inspection from an authorized inspector or agreement made to furnish such certificate at the time of sale.

BEES AND QUEENS

GOLDEN Italian queens that have the other qualities desired in bees as well as the golden color. Prices, untested, \$1.05; 6, \$5.50; 12 to 49, 80c each; 50 or more, 75c each. Health certificate and safe arrival. Hazel V. Bonkemeyer, R. 2, Randleman, N. C.

FOR SALE—Choice bright Italian queens. I have been building up this strain for the last 24 years for vigorous hustlers, good winterers, gentleness, and fine color. These queens will equal the best on the market. Health certificate goes with queens. Prices: Untested queen, \$1.25; 12 untested queens, \$12.00; one breeder, \$10.00. Emil W. Gutekunst, Colden, N. Y.

REQUEEN your colonies of bees with the best young queens you can get. We have some of them. Give us a trial order. Queens 75c each, \$9.00 per dozen. One pound of bees with young queen, \$2.00; two pounds with young queen, \$4.50. All charges paid to your postoffice. Graydon Brothers, Greenville, Ala., R. 4.

QUEENS, QUEENS, QUEENS—As many as you want at \$1.00 each. Discount on large orders. W. H. Moses, Lane City, Texas, U. S. A.

THRIFTY Caucasian tested queen, \$2.00; untested, \$1.00; Italian, 60c, by return mail. Yard inspected regularly for protection of disease. Peter Schaffhauser, Havelock, N. C.

PACKAGE BEES—None better. Van's Honey Farms, Hebron, Ind.

FOR SALE—Package bees, with queens or without. Shipped on sugar syrup without comb. No disease. Two-pound package with untested queen, one to ten, \$3.50; ten or more, \$3.25. State inspection certificate attached. Prompt delivery. Satisfaction guaranteed. Little River Apriaries, Box 83, Gause, Texas.

NORTHERN BRED QUEENS—Three-banded Italians. Unexcelled for gentleness and honey production. Untested, \$1.00; tested, \$2.00. Safe arrival and satisfaction guaranteed. Hopkins Apriaries, Withrow, Minn.

RUSCHILL'S Iobred Italian queens produce light colored, three-banded bees that are real honey getters. Untested queens, \$1.10 each. Charles L. Ruschill, Colfax, Iowa.

MACK'S FINE, LARGE, YELLOW QUEENS are guaranteed for two seasons' satisfactory service. Ready June 15. Price \$1.00 each, \$10.00 dozen. Herman McConnell, (The Bee and Honey Man) Robinson, Ill.

NORTHERN bred Italian queens, golden and three-band. Untested, \$1.00 each; tested, \$1.50. Albinos, \$2.00 each. Benson Bee Line, Galena, Ill.

DIEMER'S bright three-banded Italian queens, mailed to you in introducing cages, May and June, \$1.25; six, \$6.50; twelve, \$13.00. After June, \$1.00; six, \$5.00; twelve, \$10.00. J. F. Diemer, Liberty, Mo.

QUEENS BY RETURN MAIL

With a thousand nuclei and three experienced men, we are now in position to care for all orders promptly. Our queens hold many high production records. Why not pay a few cents more and get the best?

Safe arrival and satisfaction guaranteed. Health certificate with each shipment. One untested, 80c; twelve for \$9.00. Tested, \$1.75 each. Write for description and complete price list, also prices on quantities.

J. M. Cutts & Sons, Route 1,
Montgomery, Ala.

GOLDEN ITALIAN QUEENS—Untested: One, \$1.00; six, \$5.40; twelve or more, 80c each. Select untested, One, \$1.25; six, \$7.00; twelve or more, \$1.00 each. State inspected. Safe arrival. Money back if not satisfied.

Sam Hinshaw, Randleman, N. C.

FINEST ITALIAN QUEENS—\$1.00 each. William R. Stephens, Wingate, Ind.

PURE ITALIAN QUEENS—Untested \$1.00; tested, \$1.50. Two-pound package, \$3.00. Add price of queen wanted. Safe arrival guaranteed after May 10. Write for prices on colonies. Birdie M. Hartle, 924 Pleasant, St., Reynoldsville, Pa.

GOLDEN Italian queens that produce golden bees. Very gentle and good honey gatherers. Untested, \$1.00; six, \$5.40; twelve or more, 80c each. Tested, \$1.50. Select tested, \$2.50. State inspected. Safe arrival and satisfaction guaranteed. Send for price list.

D. T. Gaster,
R. 2, Randleman, N. C.

MISSOURI bred Italian queens. They show results. One, \$1.00; six for \$5.00.

L. E. Altwein, 1206 N. 13th St., St. Joseph, Mo.

QUINN'S QUEENS OF QUALITY—Have no superior. "There's a reason"; are "Mendelian bred." Gray Caucasians, gray Carniolans, Italians and Cyprians. If they are Quinn's they are better. Try them. Untested, \$1.50; select untested, \$2.00; tested, \$2.50; select tested, \$3.00 each. Ten per cent off on lots of one dozen.

Charles W. Quinn, La Belle, Fla.

FOR SALE—Italian queens. Untested, one to ten, \$1.00 each; eleven to twenty-five, 85c each; more than twenty-five, 75c each. Tested, \$1.50 each. Satisfaction guaranteed. Ready to ship June 1 to June 10.

R. B. Grout, Jamaica, Vt.

BRIGHT THREE-BAND ITALIANS—May 15 to July 1: Queens, untested, \$1.25 each; tested late fall, \$1.75. Package bees, two pounds, \$2.35; three pounds, \$3.25. Queen extra. Mating and arrival guaranteed. Certificate.

The Allen Apriaries, Liberty, Mo.

ITALIAN QUEENS—Untested, one to ten, \$1.00; ten to twenty-five, 85c. Write for prices on larger quantities and on combless package bees.

Louisiana Southern Bee Farm, R 2, Baton Rouge, La.

BRIGHT American Beauty Italian bees and queens. After May 10, special two-pound package on frame of emerging brood and honey, queen introduced, \$4.25; ten or more, \$4.00. Three-pound package same price. Two-pound combless package, with queen, syrup feed, \$3.25 each; ten or more, \$3.00. Queens, \$1.00, \$10.00 per dozen. Safe arrival guaranteed. State health certificate.

Tupelo Apriaries, Apalachicola, Fla.
J. L. Morgan, Prop.

WANTED—Orders for May delivery, Italian bees and queens. Quality of queens and full weight of bees absolutely guaranteed. I can fill packages and have been under way in from twelve to twenty-four hours after receipt of order. Price of two-pound packages with queen, \$3.50; three-pound packages, \$4.65. Young queens just commenced laying, guaranteed equal to the best, \$1.00 each. O. P. Hendrix, West Point, Miss.

BEES AND QUEENS—Best and cheapest. See ad on page 289. The Stover Apriaries, Tibbee Station, Miss.

PACKAGE bees and queens. Charles Wallace, Box 35, R. 1, Glenn, Cal.

TRY our high class queens and get the honey. We sell only the best selected Italians, guarantee safe arrival and complete satisfaction in every way. Our queens are personally reared and we want you to try them. Prices are \$1.00 each; 6 for \$5.50; 25 at 80c each, and 50 or more 75c each.

Salida Apriaries,
T. L. Nicolayson, Prop.
Salida, Calif.

BOOKING FOR MAY AND JUNE—My golden and three-banded Italian bees and queens. Two-pound packages, one to ten, \$3.25 each; each additional pound, \$1.00. Liberal discount on quantity. Shipped on frame of brood and honey built from Dadant foundation, Hoffman frame. Satisfaction guaranteed, health certificate attached. Ten per cent books your order. Circular sent. Address J. L. Gaspard, Hessmer, La. Remember Kellogg's Cereal.

Reference, People's Sav's Bank & Trust Co.

PETERMAN'S select Italian queens from sunny California: 1, \$1.00; 6, \$5.50; 12, \$10.00; 25, \$20.00; 100, \$75.00. Safe delivery and entire satisfaction guaranteed.

H. Peterman, Lathrop, Cal.

"SHE-SUITS-ME" QUEENS—Three-banded stock. None better. Untested queens from May 15 to June 15. \$2.00; after June 15, \$1.50. Introduction guaranteed.

Allen Latham, Norwichtown, Conn.

GOLDEN QUEENS producing yellow to tip. Untested, \$1.00 tested, \$2.00; young breeders, \$10.00. Come ahead with your big orders; my apiary has doubled twice over. Satisfied customers everywhere. Safe arrival guaranteed. Print your address.

H. G. Karns, Victoria, Va.

SIMMONS' QUEENS—Ready May 10. One, \$1.25; six, \$7.00; twelve, \$13.00. Two-frame nucleus, \$4.50; three-frame, \$6.00. No disease.

Fairmount Apriary, Livingston, N. Y.

PACKAGE BEES—Three-band strain only. If you want good, clean bees, prompt service and fair treatment, give me a trial. Shipped on sugar syrup without comb. Two-pound package, three-band strain, with untested queen, \$3.50. Ten or more, \$3.25. No disease. Health certificate attached. Ten per cent books your order. Satisfaction guaranteed.

William Piefer, Box 83, Gause, Texas.

LISTEN—If you wish to purchase guaranteed queens, write for our circular and price list.

Carolina Bee Co., W. O. Curtis, Mgr., Graham, N. C.

PLACE your order with us for early queens.

Caucasian breeders, daughters of 1926 imported mothers, ready for shipment after April 1. Italians of 14 years' selecting. Caucasian untested, one, \$1.50; six, \$7.50; twelve, \$14.00; one hundred, \$100.00. Tested, each, \$2.50 after May 15. Italians, one, \$1.00; six, \$5.50; twelve, \$10.00; one hundred, \$70.00. Tested, each, \$1.50. Pure mating, safe arrival guaranteed in U. S. and Canada. Queens for export carefully packed, safe arrival not guaranteed.

Tillery Bros., Route 6, Greenville, Ala., U. S. A.

GOLDEN UNTESTED QUEENS—Gentle and good honey gatherers as can be found; \$2.00 each. Tested, \$4.00 each. Best breeders, \$20.00. Over thirty years a Golden Italian breeder.

J. B. Brockwell, Barnetts, Va.

HIGHEST grade Italian queens—Tested, \$1.50; untested, 75 cents. Package bees, one pound, \$1.50; two pounds, \$2.50; three pounds, \$3.25. Have had no disease. State inspection certificate with each shipment. Safe delivery guaranteed.

T. L. Davis, Buffalo, Leon Co., Texas.

FOR WEAVERS' young queens and honey gatherers, see page 329.

FOR SALE—Two-pound package Italian bees with select untested queen \$3.00. All bees shipped with health certificate attached.

The Mangham Apriaries Co., C. S. Duncan, Prop., Mangham, La.

GOLDEN Italian queens and nuclei (or package bees) for 1927; the big, bright, hustling kind (the kind that gets the honey). Satisfied customers everywhere. Untested, \$1.00 each; 6, \$5.00; 12, \$10.00; 100, \$75.00. Tested, \$2.00 each. Two-frame nuclei or two-pound package with queen, \$4.50 each; ten or more, \$4.00 each. Safe arrival guaranteed. Health certificate furnished. E. F. Day, Honoraville, Ala.

LEATHER COLORED ITALIAN QUEENS—\$2.00; after June 1, \$1.00. Tested, \$2.00.
A. W. Yates,
15 Chapman St., Hartford, Conn.

GOLDEN THREE-BANDED and Carniolan queens. Tested, \$1.00; untested, 75¢ each. Bees in 1-pound package, \$1.50; 2 pounds, \$2.50; 3 pounds, \$3.25. Safe delivery guaranteed. C. B. Bankston, Box 65, Buffalo, Leon Co., Texas.

EARLY package bees and highest grade Italian queens. Our only business is Bees and Queens. We do not produce honey, deal in supplies or sell off a few old bees in the spring as a side line. Our colonies are worked exclusively for the production of young, vigorous, healthy worker bees for packages. Colonies are drawn on about every two weeks from March 20 to June 20. Two- and three-pound packages. Fifty pounds or more \$1.00 per pound. Select three-band Italian queens \$1.00 each. Ten per cent deposit will book order and reserve shipping date. Large orders booked in advance will receive special prices. We guarantee both safe arrival and satisfaction.

J. E. Wing, Cottonwood, Calif.
Most Northern Breeder in California.

PACKAGE BEES—See larger ad on page 340 or write for prices.
John A. Williams, Box 178, Oakdale, La.

FOR SALE—Golden Italian queens. One untested queen, \$1.00; tested, \$2.00 each. Queens ready about May 20. Satisfaction guaranteed.

J. F. Michael, R. 1, Winchester, Ind.

BOOKING FOR MAY DELIVERY 1927— Try Dalton's introduced, laying-entrance to you queens in packages. Save the risk of introducing her, gain the days it takes for her to get to laying and make you brood to emerge into bees. Two frames of honey brood and bees, well covered, two additional pounds shaken in, a good young Italian queen on those combs laying before she starts to lay. Price f. o. b. Bordeliville, \$6.00 per single package; 20 per cent cash books your order. Frames, Standard Hoffman, largely built on Dadant's Wired Foundation; bees and queens, light Italians, called Goldens. Health certificates on every package. Remember that last season I rejected more orders after filling to capacity than I accepted. Satisfied customers for reference in most states.

Jes Dalton, Moreauville, La.
EAT KELLOGG'S CEREALS BECAUSE HE IS BOOSTING HONEY.

FOR SALE

FOR SALE—About 300 hives of bees, equipped for comb and extracted honey. Write for particulars.

G. J. Westerik, 2460 S. Broadway, Denver, Colo.

FOR SALE—Entire apiary Italian bees. Enquire Mrs. L. J. Beach, Executrix, North East, Pa.

FOR SALE—125 colonies clean Italian bees. Edw. Klein, Waukegan, Ill.

FOR SALE—Forty new 60-pound, two-can honey cases, and other beeware, all at special bargain prices. Correspondence solicited.

J. H. Haughey, Berrien Springs, Mich.

BEE BOOKS FOR SALE—Send for list. Truesdell, Bluemont, Va.

FOR SALE—200 gallons formalin solution for treating combs. C. S. Engle, 1327 23rd St., Sioux City, Iowa.

FOR SALE—Beekeeper's home, near city park. Modern five-room house; electricity, gas, city water, steam heat; one acre ground with fruit; good barn, large poultry house, garage. Extracting house, one honey extractor and one honey tank; 26 colonies bees, Modified Dadant hives; extracting super for each hive and extracting equipment, new in 1926. Bees strong, no disease. Plenty alfalfa and basswood. \$5500.00—\$3000.00 cash, balance five years' time.

Homer Johnson, R. 6, Salem, Ohio.

NEW ten-frame bee supplies at bargain prices. Herbert Keitzer, Vernon Center, Minn.

FOUR JUMBO metal cover hives, two with drawn combs, two with full sheets three-ply Airco foundation; four hive stands, eight 4x5 section supers with sections and foundation, two ventilated escape boards, four Boardman entrance feeders with caps. All ten-frame, used three seasons. No disease and satisfaction guaranteed. Price \$25.

O. S. Ward, Obion, Tenn.

FOX AND FUR FARMING—The fastest growing and the most profitable industry in the world. Our monthly publication, seven years old, prints all the news. Sample copy 25¢. Subscription \$2.00 per year in United States, \$2.25 in Canada.

American Fox and Fur Farmer, St. Peter, Minn.

FOR SALE—One-frame observation hive; one eight-frame observation hive with comb honey super; 75 Alexander feeders for eight or ten hives, complete. All at half catalog price. Good articles.

George Seastream, Moorhead, Minn.

SLIGHTLY soiled copies of "Beekeeping in the South," a cloth-bound book well illustrated, for only 49 cents per copy while they last. Regular price is \$1.00. The damage to these books is very slight and in some cases would hardly be noticed.

American Bee Journal, Hamilton, Ill.

FOR SALE—We are constantly accumulating bee supplies, slightly shopworn, odd sized, surpluses, etc., which we desire to dispose of and on which we can quote you bargain prices. Write for complete list of our bargain material. We can save you money on items you may desire from it.

Dadant & Sons, Hamilton, Illinois.

FOR SALE—Damaged sugar for bee feed. Winkler Honey Co., Joliet, Ill.

FOR SALE—One eight-frame Root automatic power extractor, one four-frame hand power extractor, both in first-class condition. Prices on request.

Weber Brothers, Laurel, Mont.

OWING to slight changes in management, we offer a large list of bee supplies, new and used. All bargains. Write for list.

Winkler Honey Co., Joliet, Ill.

HONEY AND BEESWAX

HONEY—Be your order large or small, we ship promptly.

Dakota Sunshine Apiaries, Amenia, N. D.

"STURDEVANT'S NEBRASKA CLOVER HONEY" — White, extracted, sixties. Rochester, N. Y., Boston, Mass., Home Apiaries. Bids solicited.

J. H. Sturdevant, St. Paul, Neb.

WILL TRADE package bees for wax, white honey, or what?

Van's Honey Farms, Hebron, Ind.

BUCKWHEAT extracted honey for sale, 60-lb. cans, at 7c.

Edward Hogan, 179 Gibson St., Canandaigua, N. Y.

TUPELO extracted honey; unheated, no granulation, retains delicate fragrance and aroma; 20c for sample of barrel or car lots. Parcel post package delivered: half gallon, \$1.95; one gallon, \$3.75.

M. L. Nisbet & Bro., Bainbridge, Ga.

WINKLER'S choice clover honey. Write for June closing out prices.

Edward A. Winkler, Joliet, Ill.

FOR SALE—Clover honey in new 60-pound cans, 9c per pound. Joseph H. Hoehn, Ottoville, Ohio.

FANCY white tupelo extracted and bulk comb, packed in five-pound tin.

J. L. Morgan, Tupelo Apiaries, Apalachicola, Fla.

FOR SALE—Large stock first-class white clover, basswood, sweet clover, light amber and buckwheat extracted honey. Producers who need more, dealers and solicitors should write us about their wants.

A. I. Root Company, 224 W. Huron St., Chicago, Ill.

FOR SALE—White sweet clover extracted honey and fancy white comb in shallow frames. Quality goods that will please your trade. Write for prices.

The Colorado Honey Producers' Ass'n, Denver, Colo.

WINKLER choice clover honey. Write for new reduced prices in order to close out.

Edw. A. Winkler, Joliet, Ill.

SWEET clover extracted honey, not extracted until thoroughly ripe. Write for prices, stating quantity. Sample 15c.

Arthur Beals, Otoe, Iowa

FOR SALE—Fine clover honey in new 60's. Free of disease. Twelve dollars per case.

Newman I. Lyle, Sheldon, Iowa.

FOR SALE—Best clover extracted honey in new sixties. Say how much you can use and let us quote you our price.

E. D. Townsend & Sons, Northstar, Mich.

HONEY FOR SALE—Any kind, any quantity. The John G. Paton Co., 217 Broadway, New York.

FOR SALE—Northern white extracted and comb honey. M. W. Cousineau, Moorhead, Minn.

FOR SALE—Ohio white clover honey \$12.00 per case; in ten-case lots, \$10.80 per case; twelve 5-lb. pails, \$8.00; chunk honey, two 5-lb. pails \$10.00. Sample 15c.

F. W. Summerfield, Waterville, Ohio.

FOR SALE—White extracted honey in five-pound pails. Twelve pails, \$9.60; fifty, \$37.50; one hundred, \$70.00, f. o. b. Jenison. Also northern bred Italian queens.

Jay Cowling, Jenison, Mich.

SHALLOW frame white comb honey and white extracted honey.

The Colorado Honey Prod. Ass'n, Denver, Colo.

FOR SALE—Choice clover extracted honey packed in new 60-pound cans and cases.

J. D. Beals, Dwight, N. Dak.

HONEY WANTED—Several thousand cases white clover comb honey, size 4 1/4 x 4 1/4 x 1 1/2. Must be white and strictly graded, fancy and No. 1. No other grade wanted; also extracted. Send sample, give quantity and price wanted. We pay cash.

A. L. Haenseroth, 4161 Lincoln Ave., Chicago, Ill.

"BEEWARE" and Dadant's Wired Foundation for the Northwest. Catalog prices. F. O. B. Fromberg, Montana. Beeswax wanted. Write for prices.

B. F. Smith, Jr., Fromberg, Mont.

FOR SALE—Our own crop amber fall honey in barrels and cans. State quantity wanted and we will quote prices. Samples on request.

Dadant & Sons, Hamilton, Ill.

HONEY FOR SALE—In 60-lb. tins. White clover at 12c lb.; white sage at 12c lb.; white orange at 13c lb.; extra L. A. sage at 11c lb. Hoffman & Hauck, Inc., Ozone Park, New York.

SUPPLIES

ROBINSON'S comb foundation will please the bees, and the price will please the beekeeper. Wax worked at lowest rates.

E. S. Robinson, Mayville, N. Y.

ROOT bee supplies and a new moth killer. More efficient than carbondisulphide and will not explode; \$3.00 per gal., \$2.00 per half gallon.

A. V. Small, Augusta, Kans.

BEST QUALITY bee supplies, attractive prices, prompt shipment. Illustrated catalog on request. We buy beeswax at all times and remit promptly.

The Colorado Honey Producers' Ass'n, Denver, Colo.

FOR SALE—Good second-hand 60-lb. cans, two cans to a case, boxed. We have large stocks of these on hand. Please write for prices if interested. We are offering only good cans and good cases.

C. H. W. Weber & Co., Cincinnati O.

MISCELLANEOUS

WILL EXCHANGE packages bees or queens for standard breed of chickens, ducks and geese. Tupelo Apiaries, Apalachicola, Fla.

DIEMER QUEEN CAGE—A novelty in queen introduction. Indorsed by hundreds of beekeepers in U. S. and Canada. Directions with each shipment. Price 15 cents; eight, \$1.00. Patented and manufactured by

J. F. Diemer, Liberty, Mo.

LABELS, PRINTING, ENGRAVING—Finest work, lowest prices. Catalog free. Write Traders Printing Co., Springfield, Mo.

WESTERN HONEY BEE, 2823 E. 4th St., Los Angeles, Calif., published by Western beekeepers, where commercial honey production is farther advanced than in any other section of the world. \$1.00 per year. Send for sample copy.

MAKE queen introduction sure. One Safin cage by mail, 25c; 5 for \$1.00. Allen Latham, Norwichtown, Conn.

HAVE YOU any Bee Journals or bee books published previous to 1900 you wish to dispose of? If so send us a list. American Bee Journal, Hamilton, Ill.

THE DADANT SYSTEM IN ITALIAN—The "Dadant System of Beekeeping" is now published in Italian, "Il Sistema d'Apicoltura Dadant." Send orders to the American Bee Journal. Price \$1.00.

GLEANINGS IN BEE CULTURE, published at Medina, Ohio, is the most carefully edited bee journal in the world. Its editor-in-chief is George S. Demuth. Its field editor is E. R. Root. Ask for sample copy.

WANTED

WANTED—Young man assistant in extracted honey production. The Hofmann Apiaries, Janesville, Wis.

MARRIED man wants to learn bee business with reliable company or private owner. Good references. Oregon, Washington, California preferred.

Box 316, Juliaetta, Idaho.

WANTED—Strong young man of good habits, for apriary work and to assist in honey sales. Board furnished. Location near Milwaukee. John Kneser, R. 1, Hales Corners, Wis.

WANTED—Two-frame, second-hand honey extractor. Must be in good condition. Ed Stephens, Gilt Edge, Mont.

WANTED—Shipments of old comb and cappings for rendering. We pay the highest cash and trade prices, charging but 5¢ a pound for wax rendering.

Fred W. Muth Co., 204 Walnut St., Cincinnati, Ohio.

Girls Learn About Honey

At the Iowa College of Agriculture the Home Economics Department is giving some attention to honey through the marketing class. A group of about one hundred girls listens to a lecture on honey as available to the housewife about five times each quarter. Professor Padock, State Apriarist, gives the lectures, thus insuring that accurate information is presented.

If the Home Economics Department of all the colleges could be induced to give sympathetic attention to honey and its uses in the home our marketing problem would soon be solved. These girls, who will shortly go out as home advisers or to do similar work, will arouse much interest in any product which they recommend.

"Honey of Danger"

This is a sensational novel by Frank Lillie Pollock, who is already the author of "Wilderness Honey." The plot is rather intricate and the honey harvested seems of a very peculiar nature. But the beekeeping described in it as a part of the action is quite correct. Mr. Pollock has evidently worked among the bees.

Classified Ads

"Possibly you recall the little ad I put in your March issue, of two honey extractors for sale. I took those over at a forced sale (having no knowledge of bees).

Supposed I would have to list them at least three or four times, BUT I DID NOT HAVE ENOUGH EXTRACTORS FOR ONE ADV. Think I could have sold at least a dozen.

I shipped one to Painted Post, N. Y., and one to Ozan, Ark.

I felt it my duty to compliment you on the success of your advertising."

C. A. Dye, Belle Valley, Ohio.

If you have anything to sell or trade use our classified columns

STATEMENT OF OWNERSHIP

Statement of the ownership, management, circulation, etc., required by the Act of Congress of August 24, 1912, of American Bee Journal, published monthly at Hamilton, Illinois, for April, 1927:

STATE OF ILLINOIS, } ss.
County of Hancock, } ss.

Before me, a notary public in and for the state and county aforesaid, personally appeared M. G. Dadant, who, having been duly sworn according to law, deposes and says that he is the business manager of the American Bee Journal, and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management, etc., of the aforesaid publication for the date shown in the above caption, rendered by the Act of August 24, 1912, embodied in Section 443, Postal Laws and Regulations, printed on the reverse side of this form, to-wit:

1. That the names and addresses of the publisher, editor, managing editor and business manager are:

Publishers, American Bee Journal, Hamilton, Ill.

Editor, C. P. Dadant, Hamilton, Ill.

Managing editor, Frank C. Pellett, Hamilton, Ill.

Business manager, M. G. Dadant, Hamilton, Ill.

2. That owners are:

C. P. Dadant, Hamilton, Ill.

H. C. Dadant, Hamilton, Ill.

V. M. Dadant, Hamilton, Ill.

C. S. Dadant, Hamilton, Ill.

L. C. Dadant, Hamilton, Ill.

M. G. Dadant, Hamilton, Ill.

Leon Saugier, Hamilton, Ill.

Joseph Saugier, Hamilton, Ill.

That the known bondholders, mortgagees and other security holders owning or holding one per cent or more of the total amount of bonds, mortgages or other securities are: None.

(Signed) M. G. DADANT,
Business Manager American Bee Journal.

Sworn to and subscribed before me this sixth day of May, 1927.

MINNIE S. KING,
Notary Public.
My commission expires Nov. 13, 1929.